

FLIGHT

First Aero Weekly in the World.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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EDITORIAL COMMENT.

The New FLIGHT.

Well, it seems we have planted our new roots into good wholesome soil, to judge by the letters of congratulation that we have received on the announcement last week regarding the change in the price of FLIGHT that commences with the present issue. The reader who will take the trouble to write a letter of congratulation to the publishers who are about to charge him three times the price that he formerly paid, must have a very sincere regard for the object on which he is spending his money. We knew that we were doing the right thing by taking our readers into our confidence in the matter of the necessity for raising the price, but we scarcely expected quite such an immediate expression of good fellowship as the post has brought to our office during the past week. To say that we appreciate it is to say far less than is adequate to express the full depth of our feelings in the matter, for the Editorial heart is human *au fond*, notwithstanding the fact that etiquette demands an impersonal attitude towards the ordinary business of journalism.

FLIGHT, we venture to think, is slightly different from the ordinary weekly paper even of the specialised kind.

Those who are interested in flying are linked together by a very strong bond, and the tie is not one that could easily be severed for has not the knot been sealed by the very life blood of those brave men who have given their all to the cause. It is not possible that everyone of the many thousands who read FLIGHT every week should themselves be able to keep in personal touch with the centres where flying takes place. The interest of many is necessarily detached from the immediate environment of the pursuit of aviation through exigencies of their own surroundings over which they have no control. To such as these FLIGHT serves as an all important channel of news. Its weekly arrival at the house receives something more than an ordinary welcome because of the vital character of the doings with which it is associated. The last thing that is ever likely to be said of the art of Flight is that it is a tame game for those who practise it, and it seems to us that everyone who has once admitted his mind to a real interest in the movement feels himself to be somewhat in the position of the man who has put his hand to the plough and must not turn back. There is no doubt that the interest even of those who cannot do very much for aviation is, nevertheless, collectively, of great help to the cause. They at least have got below the surface, and can see further than those who don't trouble to think, but who are very ready to pretend a feeling of being shocked when they read in the daily Press of *another* aeroplane disaster. When you come to question individuals of this species, you find that they have no conception whatever of the purpose that underlies this persistent practice of flying. They have adopted an opinion that all flying machines are mere death-traps, and it is very terrible that so many thoughtless people should play with them. From that attitude of mind you will never shake them until you have succeeded in implanting therein the germ of a rational interest in the flying machine itself.

So we are very gratified at the way readers have proclaimed their rally to our new standard, and we shall do our best to justify the continuance of their support. No one, we imagine, wishes to see FLIGHT undergo a radical change, else should we not already be making an appeal to such a wide circle of readers. On the other hand, it will be easier for us now to extend somewhat the variety of interest attaching to each issue, and already we have embarked upon several new features that we hope may appeal to the majority of our supporters. It occurred to us, for instance, that it would be very fitting to publish portraits of men of moment in the world of flight,

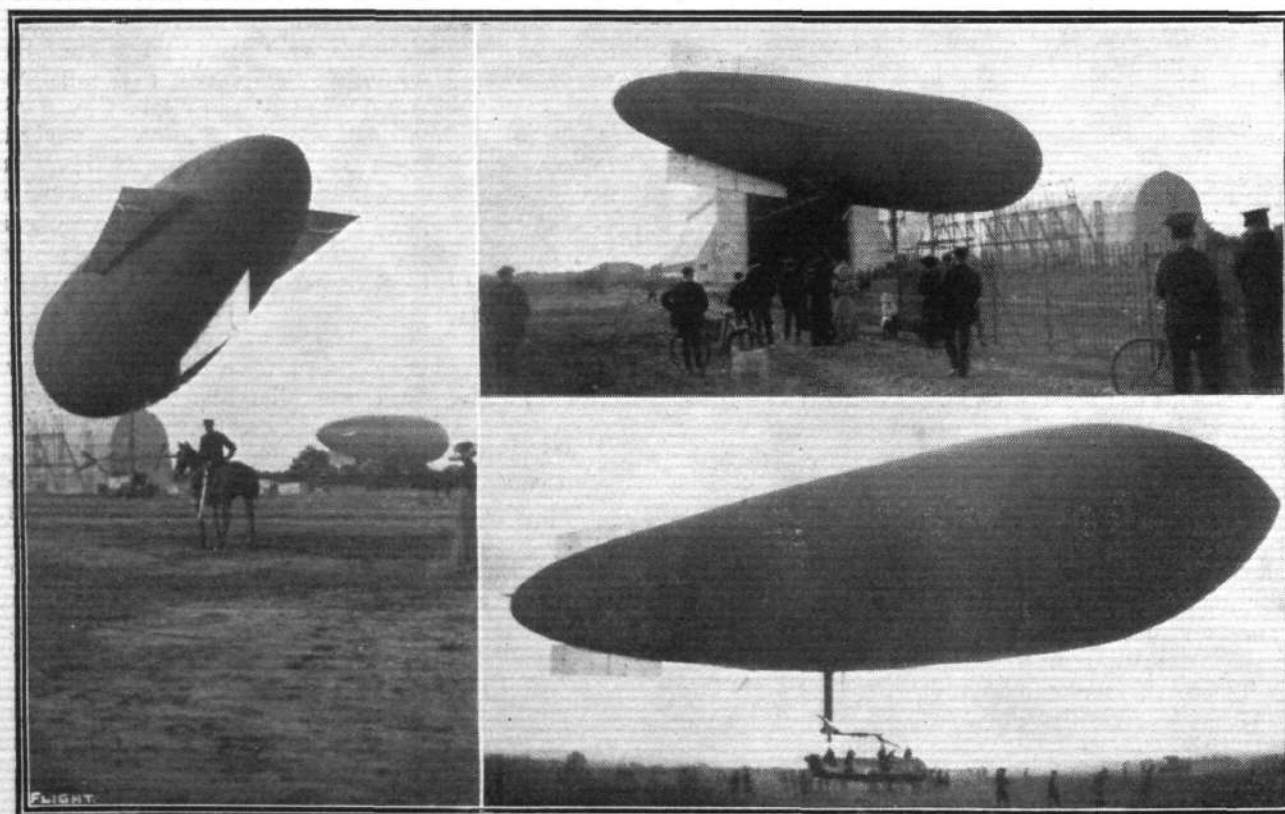
and whether or no the portraits as a series form an attraction, as we sincerely hope they will, there can be no shadow of doubt that the subject of the first will attract an undivided attention. Sir Charles Rose, the present Chairman of the Royal Aero Club, is one of those retiring men of whom the general public may hear little but whose quiet strength is of the kind that supports nations. Certainly Sir Charles has been a true champion of the cause of flight just as he is also a great leader in the inner circles of the automobile world. It is to Sir Charles Rose that the industry largely owes the direct and friendly relations that were so successfully established between the constructors and the Government in connection with the arrangement of the Military Aeroplane Trials. For the esteem in which he is held personally by everyone connected with aviation, and also for his position as Chairman of the R.Ae.C., it is very fitting that Sir Charles Rose should appear in the first of this portrait series, and it is, we might remark, very characteristic of his courtesy that he should have consented to do so. Although it is not, perhaps, proper for us to comment on the portrait in question, we might say, for the benefit of those who do not know Sir Charles Rose by sight, that it is an uncommonly good likeness, and that, as a photograph, it has been absolutely untouched. Among those who have consented to follow Sir Charles Rose in this series, and whose portraits will appear in due course, are Major-General R. M. Ruck, C.B., Chairman of the Aeronautical Society, and Col. H. C. L. Holden, R.A., F.R.S., who is Chairman of the Public Safety and Accidents Investigation Committee.

An improvement that we hope will find approval among those who appreciate the technical illustrations in FLIGHT is an extension in the number of detail sketches, which serve so admirably to convey what it is often impossible to describe in words about the construction of modern machines. It is also our hope that in future the

photographs of aeroplanes that appear in FLIGHT of the work of our staff photographer may show the effects of the special study that he has been making of a difficult subject. An aeroplane with its great length in two directions at right angles to each other forms a most difficult perspective view, but we believe that in most cases we shall succeed better than heretofore in presenting the characteristic appearance of the machine. The scale drawings, which have been so much appreciated in the past, will be continued. Yet another section of the paper to which we desire to draw particular attention is that devoted to models, which is under the personal editorship of Mr. V. E. Johnson, M.A. In this section it is our desire to do everything that we can to encourage a genuine advance in the scientific interest of model research, and we shall be pleased to give serious consideration to any suggestions that our model readers may have at heart. When it is realised how much instruction and interest can be derived from the mere gliding of a half-sheet of notepaper, it is surely also essential to bear in mind the permanent value of the model section in the world of aviation at large.

The Coming Shows.

There is much to look forward to in the two great Shows devoted to aviation, which take place during the coming winter. In the first place the Paris Aero Salon opens its doors at the Grand Palais on October 26th, and will continue to attract its crowds until the closing date, November 10th. Some time in February an Aeronautical Show will be held at Olympia by the Society of Motor Manufacturers and Traders under the auspices of the Royal Aero Club. Aviation has progressed so enormously from both the popular and the practical point of view since the holding of the Society's last Exhibition, that we venture to predict such a success that the continuance as an annual event will be assured.

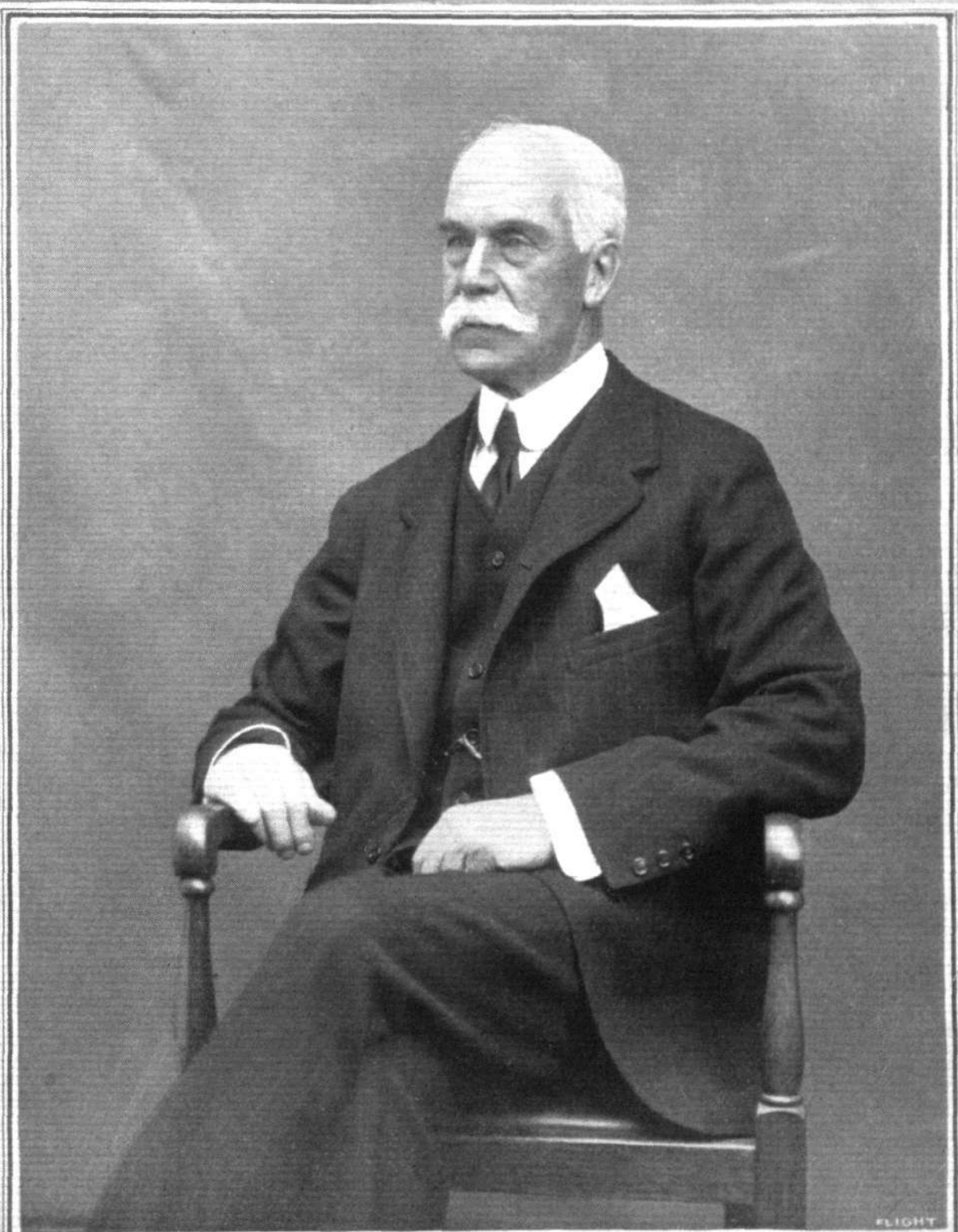


THE NEW ARMY AIRSHIP "DELTA" AT FARNBOROUGH.—In the left-hand picture in the distance is seen "Beta II."

OCTOBER 19, 1912.

FLIGHT

MEN OF MOMENT IN THE WORLD OF FLIGHT.



The Chairman of the Royal Aero Club of the United Kingdom: Sir CHARLES D. ROSE, Bart., M.P.

HENDON SECOND AUTUMN MEETING.

FORTUNATELY the thick fog which hung over London last Saturday did not make its appearance at the Hendon aerodrome. Instead, there was bright sunshine and very little wind; it was, in fact, a glorious day, and certainly much warmer than it was on the occasion of one of the August meetings. Nearly all the machines at the aerodrome, therefore, were in active operation, so that at times the air was, metaphorically speaking, full of aeroplanes of quite a variety of types.

Early in the afternoon several trial flights were got through before the first event took place. This latter was the cross-country handicap to Elstree and back twice, a distance of about 18 or 19 miles, the entrant of the winner of which was to receive a prize and trophy presented by H.H. The Maharaja of Alwar. Lewis Turner on the Grahame-White biplane won this event by 44 secs., Verrier on the Maurice Farman swooping in second, Desoutter on the Blériot coming in 31 secs. behind; Travers, on the 80-h.p. Henry Farman, who had started third, came in last. While the above pilots were away, exhibition flights were made inside the Aerodrome by B. C. Hucks on the 70-h.p. Gnome-Blériot and Eugene Galy with a passenger on the 60-h.p. Anzani-Caudron biplane. Lieut. Parke, R.N., was also making passenger flights on the elegant Handley Page monoplane.

Huck's new machine is exceedingly speedy, and except, perhaps, the little Caudron monoplane, is the fastest machine that has been seen at Hendon; his time over the course worked out at about 70 m.p.h. The Handley Page machine, which created a very favourable impression on the visitors, is not only extremely beautiful to look at, but appears to be remarkably stable. Several times Lieut. Parke raised both hands above his head while the machine was in flight; throughout the rest of the day he made further trial flights on the same machine, each time with a passenger.

Just before 4.30, the Breguet biplane with a 110-h.p. Canton Unné engine was brought out and given an engine test. It was then that five machines could be seen in the air together, viz., the Handley Page monoplane, Huck's Blériot, Sydney Pickles on the 35-h.p. Caudron, Noel on the 80-h.p. Farman, and Brock on the Deperdussin. Verrier then started his passenger-carrying trips, while Grahame-White gave a very fine exhibition on the 70-h.p. "Wake Up England" Farman. His bankings on this machine are very impressive, and by flying the machine close to the ground

he emphasized the idea of great speed. The next up was Galy, who again took a passenger with him on the Caudron biplane. After this, M. A. Richet got up the Breguet for a few minutes, and Jules Nardini ascended with a passenger on the 60-h.p. Anzani-Deperdussin mono. One of Nardini's mechanics escaped from what might have been a nasty accident, for in swinging the propeller he failed to jump clear quickly enough when the engine started, so that the propeller caught his coat, tearing away a large piece and flinging a number of tools that were in his pocket in all directions.

The Grand Speed Handicap, two heats only (four laps each), of which were held, started shortly after 5 o'clock. In the first heat four machines made good, viz.: B. C. Hucks, 70-h.p. Gnome-Blériot (Scratch); Louis Noel, 80-h.p. Gnome-Henry Farman (51 secs.); Pierre Verrier, 70-h.p. Renault-Maurice Farman, and Claude Grahame-White, 70-h.p. Gnome-Henry Farman. The finish was very exciting all four coming in fairly close together, Hucks first, then Noel, Grahame-White and Verrier following sharply behind. Six machines lined up for the second heat, three monoplanes and three biplanes, as follows: Marcel Desoutter, 50-h.p. Gnome-Blériot; Jules Nardini, 60-h.p. Anzani-Deperdussin, and L. Brock, 35-h.p. Anzani-Deperdussin monoplanes, and Eugene Galy, 60-h.p. Caudron, Sydney Pickles, 35-h.p. Caudron, and Lewis Turner, 50-h.p. Gnome-Grahame-White biplanes. Galy was just about to start when it was found that the tail boom was damaged, so he had to retire. The two Deperdussins also fell out of the race, and Sydney Pickles, who came in first, was disqualified for fouling a pylon—very hard luck, for he made a fine fight for first place; but better luck next time! The first place, therefore, went to the next man in, Desoutter, while Turner was second. By then it was almost dark, and streaks of mist floating up all over the ground, it was decided to bring the meeting to a close, and to fly the final heat to-day (Saturday).



THE HANDLEY PAGE MONOPLANE.

THE performances of the Handley Page monoplane during the last two week-ends have set at rest once and for all any feeling of uncertainty as to the weight-lifting capacity and reliability of this machine. During this time, since the machine has been at Hendon, twenty-eight passengers have been taken. Amongst the eight passengers on Saturday last were two young ladies, cousins of Mr. Page, and on Sunday two youngsters were squeezed into the pilot's seat at one time and taken for a twenty minutes' trip over the Welsh Harp and the surrounding country. The total live load in this case, including the pilot's weight (about 10 st.), was 367 lbs., while the machine also had on board sufficient petrol and oil for two hours.

About 2.45 on Sunday afternoon, the machine set out for Brooklands carrying as passenger Mr. Nicholson, one of the partners in the firm of Messrs. Jenson and Nicholson, the well-known varnish manufacturers, of Stratford, E., who had booked a return passage to the Weybridge track. The passenger had an extra interest in the machine, as all the metal parts were enamelled with "Robbialac," one of his firm's productions. This enamel dries very quickly, giving a fine glossy surface without stoving, and being unaffected by castor oil, is very useful for the parts surrounding the engine. It already has a considerable vogue amongst motor cyclists.

Amongst other passengers carried over last week-end were Mr. Robert Blackburn, Mr. Travers, Capt. Tyrer, Mrs. Stocks, Mr. Ledebor, and Mr. Gates. Considerable distances were flown with the pilot's hands removed from the control wheel.

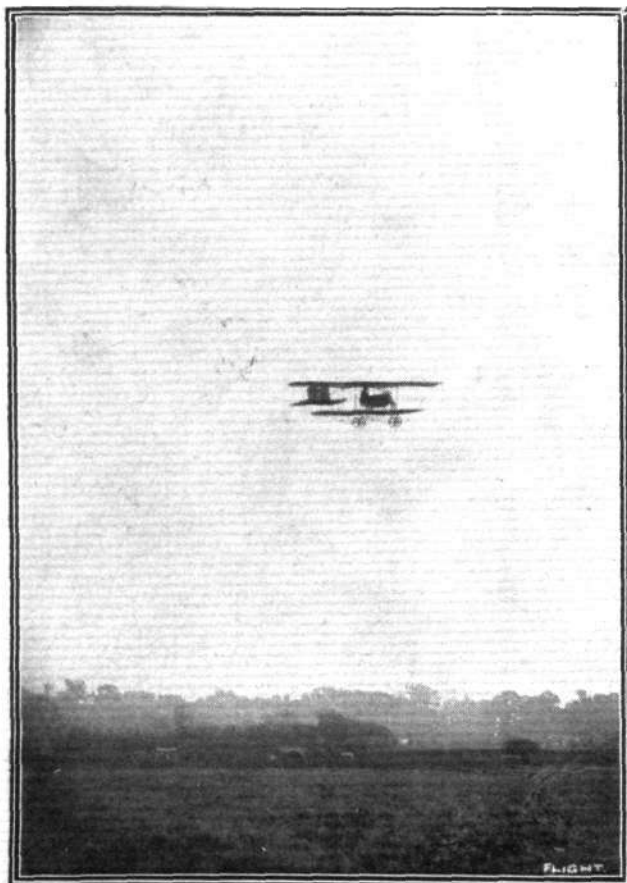


Kites in Parliament.

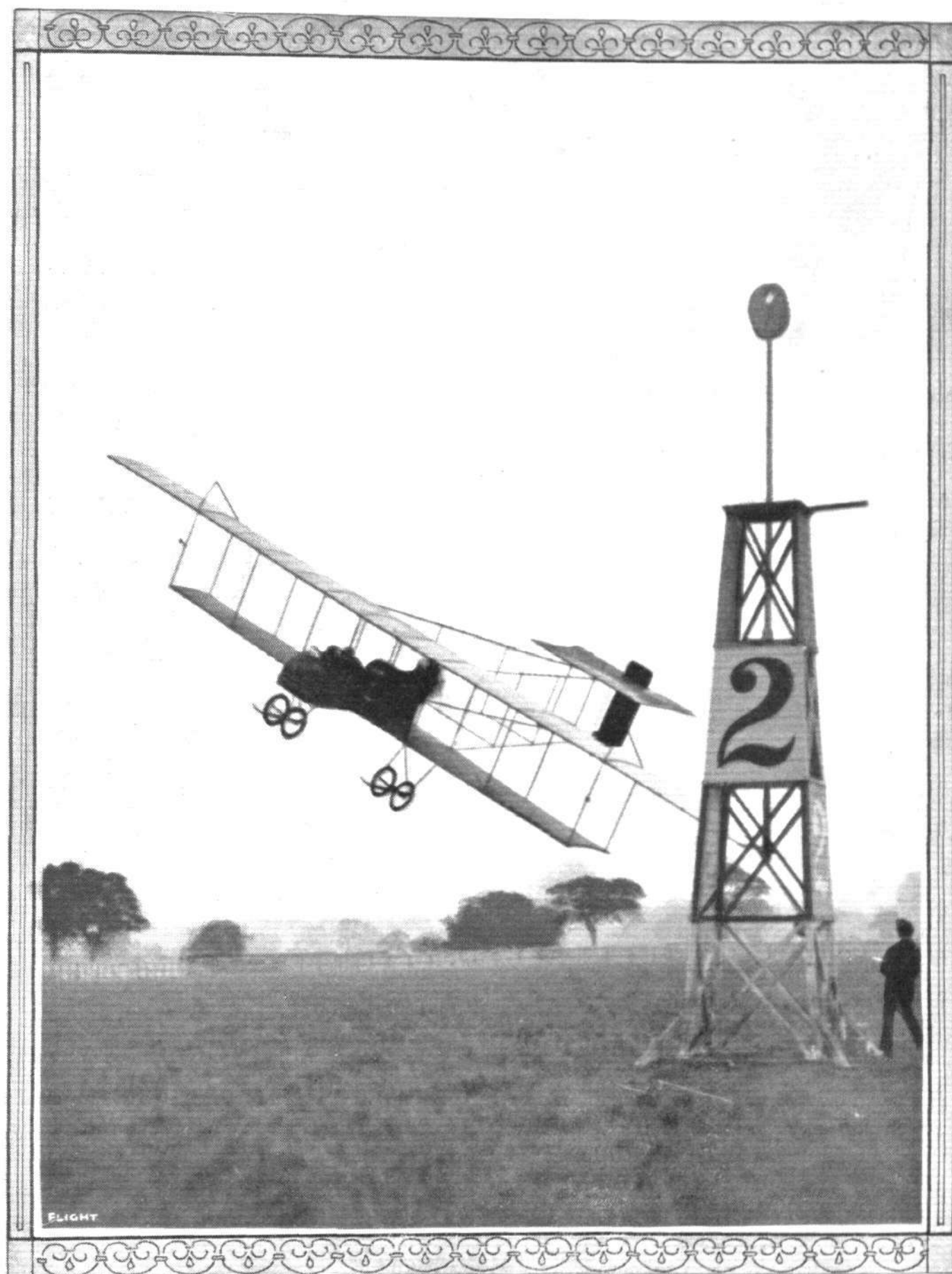
ON Tuesday in the House of Common Col. Seely was asked whether the Government had made exhaustive tests with the Baden-Powell war kites as supplied to the German and other foreign armies, and, if so, whether they have been found inferior to the Cody equipment, for which the Government had just paid a remuneration of £5,000.

Col. Seely, in reply, said that exhaustive trials were made with Major Baden-Powell's war kites up to the year 1898, when it was definitely decided not to proceed further with that particular design of kite. Since 1906, when a final reply was given to Major Baden-Powell, nothing further has been suggested by him. He has offered his invention to the German and other armies with the consent of the Army Council. About 1901 a design based on a different principle was put forward by Mr. Cody, for which he has received the remuneration mentioned.

In reply to a further question as to comparative costs, the Minister of War said that the merits of both types of kite were fully considered by the greatest experts available, and they came to the conclusion that Mr. Cody's was the best.



Dr. D. Edmund Stodart flying the 35-h.p. Caudron biplane at Hendon, the machine on which he passed his *brevet* tests at the W. H. Ewen School of Flying, Hendon.



"Flight" Copyright.

A fine bit of banking by Mr. Claude Grahame-White on the Henry Farman, with Mr. R. T. Gates as passenger, round No. 2 pylon at the Hendon Aerodrome during a speed contest.

FROM THE BRITISH FLYING GROUNDS.

Royal Aero Club Eastchurch Flying Ground.

THE Naval wing of the Royal Flying Corps are doing a large amount of useful work, and during the past week have passed four pilots through their *brevet* tests satisfactorily. These being Lieut. Courtney on Tuesday, Lieut. Berne on Wednesday, Electrician Deakin and Boatswain Bobbett on Saturday.

As regards other flying, some exceedingly good work has been done by Lieuts. Seddon and Briggs in turns. Lieut. Seddon on Tuesday week took A. B. Minter as passenger on 38 to a height of 5,287 ft., on Thursday he flew for two hours, reaching over 7,000 ft., the limit of the aneroïd on machine, and on Saturday took passenger up 6,100 ft. Lieut. Briggs was out with passenger on Monday, on Tuesday he took 38 up to 5,100 ft., and finished with a spiral *vol plane* with engine off. Wednesday up for half hour with passenger, Thursday up for 2½ hours with passenger reaching 5,200 ft., and on Saturday he was up 20 mins. each with A. B. Stevens, Electrician Bradford and Mr. Florence as passengers respectively, afterwards taking Capt. Barnby, R.M.L.I., for 40 mins. and attaining height of 3,650 ft. A really creditable week's work for both officers and machines.

Lieut. Grey was also out several times on the Deperdussin monoplane.

On Thursday the new Naval Bristol biplane went through its height-climbing test and one hour's flight before being officially handed over to the Admiralty. On Sunday Mr. Alec Ogilvie was out on N.E.C.-engined Wright with Mr. Guy Fowler as passenger, he afterwards taking up several others. Mr. McClean on the 70 tractor was also taking passengers.

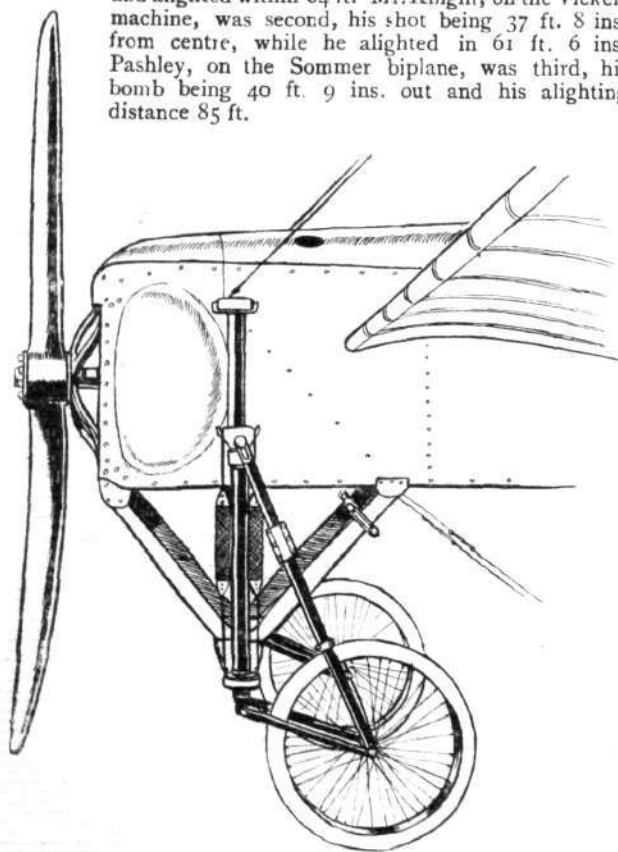
Brooklands Aerodrome.

MONDAY last week Mr. Sopwith was on the 70-h.p. tractor biplane with Mr. Merriam as passenger, reaching 1,500 ft. Afterwards Mr. Sopwith went to Farnborough with Mr. Charteris as passenger. Both the Flanders machine and Martin-Handasyde were also putting in work.

Tuesday was very foggy and no flying therefore, whilst Wednesday it was very windy.

Thursday all schools out doing good work. Petre the Painter on Martin-Handasyde mono., Sopwith on Howard-Wright, and on Thursday Petre was up over an hour on the Martin-Handasyde.

In the bomb-dropping competition on Saturday victory went to Mr. Sopwith who got his shot within 9 ft. of the centre of the target and alighted within 64 ft. Mr. Knight, on the Vickers machine, was second, his shot being 37 ft. 8 ins. from centre, while he alighted in 61 ft. 6 ins. Pashley, on the Sommer biplane, was third, his bomb being 40 ft. 9 ins. out and his alighting distance 85 ft.



Landing chassis and tail skid of Mr. Hucks' Blériot, with which he has been making the *Daily Mail* flights so successfully.

The competition on Sunday afternoon was for altitude, and it was won by Raynham who took up the Flanders monoplane to 3,000 ft., Petre, on the Martin-Handasyde, was second with 2,900 ft., and Pashley, on the Sommer, third with 1,600 ft. Later in the day Raynham went up to 3,600 ft. On Tuesday Hawker was out for the first time on the A.B.C.-engined Burgess-Wright, and on Wednesday he made a test of 3 hrs. 31 mins. for the Michelin Cup No. 1. Charteris also made several flights of about 20 mins. each on the A.B.C.-Avro, and once caught the "back-wash" of the Burgess-Wright, which gave him a few anxious seconds.

Bristol School.—Tuesday morning last week, Merriam was up with Capt. Pigot as passenger, afterwards sitting behind same pupil for straights, Bendall meanwhile taking up Major Forman for tuition, Merriam also up teaching same pupil. Mr. Payze made two circuits and found the air very tricky. Merriam then tested air and found it bad, which put an end to the morning's work.

Merriam made solo Wednesday morning, and then up with Major Forman and a new pupil, Lieut. Boyle-Bendall. Capt. Styles and Boger got in two solos each; the latter unfortunately side-slipped into the river, smashing the machine, but without injury to pupil.

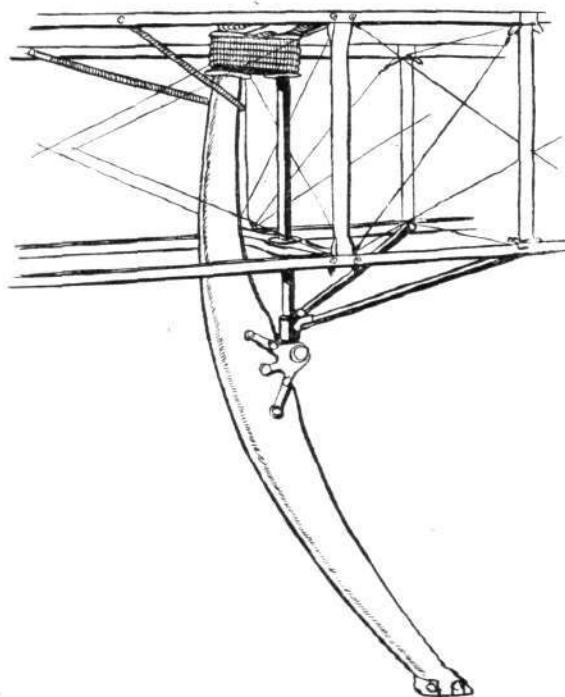
Thursday evening, Merriam trying conditions with Lieut. Boyle as passenger, but found it too bad for pupils. He was afterwards testing, taking up Lieut. Rodwell (prospective pupil). Bendall up with Major Forman and Lieut. Boyle, and Merriam with Lieut. MacLean (new pupil) for his first trip, and then up behind Capt. Pigot on straights. Capt. Styles and Mr. Darracq solos each.

Bendall doing solo Friday evening, then up with Major Forman and Lieut. MacLean. Merriam with Lieut. Boyle; Capt. Pigot hops alone; Capt. Styles and Mr. Darracq solos. Fog prevented further flying.

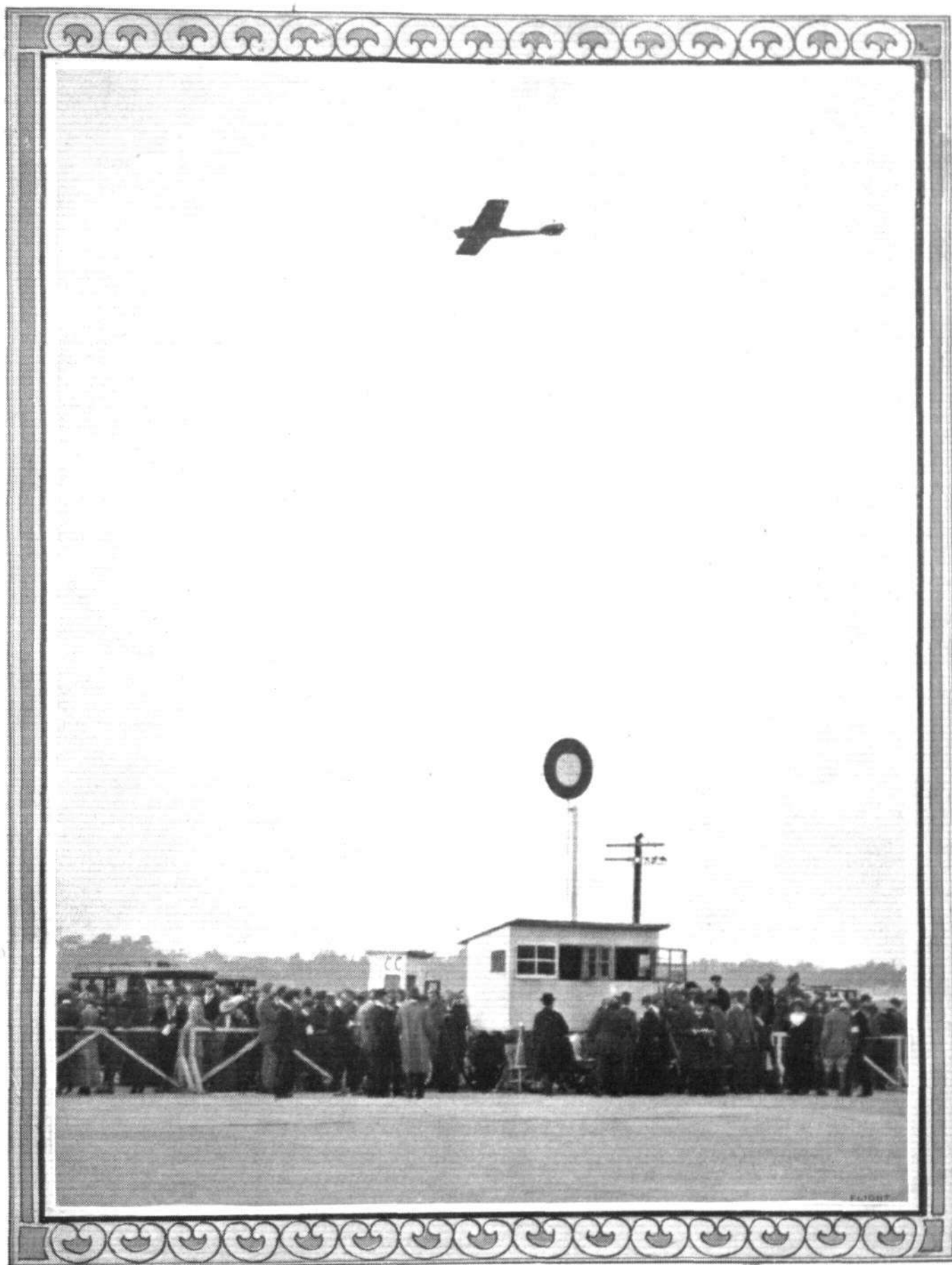
Saturday Bendall trying conditions, then up with Lieut. Boyle, Lieut. Read, Capt. Styles, Mr. Darracq, Payze. Lieut. Pretymann put in some circuits and Capt. Pigot straights.

Bendall trying conditions Sunday, but found it too bad for school work; up again later, but still too bad. Later on tried again, found it a little better, so sent Lieut. Read, Mr. Darracq, Capt. Styles, and Mr. Payze for straights. Next day Bendall tried conditions, which were not very good. Capt. Pigot and Boger, Lieut. Pretymann, Mr. Payze, and Darracq doing straights. Bendall up with Lieut. Rodwell and Major Forman.

Vickers School.—Mr. de la Ferte, Monday afternoon last week, on No. 2, was putting in a lot of good practice. Barnwell was on the Vickers-Farman for some time. Next day, in the morning, Capt. Stott was doing straights on No. 2 and improving rapidly, while Barnwell took up Mr. Corballis on the Farman for instruction. In the evening MacDonald was on No. 6 flying for some time with passengers, but found the weather too foggy to go far afield.



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"Flight" Copyright.

The Vickers monoplane making a demonstration flight at Brooklands Aerodrome during the British Motor Cycle Racing Club's Meeting on Saturday last.

Barnwell, in attempting to avoid some machines on the ground, ran into the fence, broke the propeller and one wing. It speaks well for the steel landing chassis that it stood up while the fence broke, thereby saving a nasty smash.

Barnwell, on Wednesday, with Mr. Corballis, was on the Farman in the morning fog, and again on Vickers No. 3 in the evening, but found it too windy for pupils. Thursday, Barnwell again with Mr. Corballis on the Farman while Mr. de la Ferte did solos on No. 3. Knight took out No. 5, which has been overhauled and fitted with a new English engine and Vickers-Levaiseur propeller, and flew for 20 mins. in good style.

Barnwell out during Friday evening on No. 6, but found it too foggy for extended flying. On Saturday morning he was up with Mr. Corballis and Mr. Soames (3rd Hussars), a new pupil, to whom he gave his *baptême de l'air*. Knight also on the Farman with other pupils, later putting in half an hour's practice on No. 5 over the surrounding country. Mr. de la Ferte practising good curves on No. 3 getting her up to 50 ft. or more in straights.

Knight out on No. 5 on Sunday morning, and in the afternoon the school was hard at work, Barnwell with Mr. Jenkins, Corballis and Soames on the Farman, Capt. Beatty and Barnwell on No. 6, and Knight and Capt. Wood on No. 5.

Capt. Wood testing early Monday, but there was too much wind for pupils.

Esbourne Aerodrome.

TUESDAY, last week, an early start was made, Mr. Foggin getting away shortly after 6.30 a.m. on the 28-h.p. Anzani with the intention of having another try for his certificate. Misfortune, however, again overtook him. He flew one figure eight in perfect style, and was just commencing the second when the engine gave out, forcing him to come down. On examination, it was found that the aluminium bracket supporting the magneto had broken and allowed it to slip. Mr. Hammond was out on the Bristol giving instruction to the biplane pupils. Mr. Lerwill made two solos, flying very well and landing with excellent judgment. At midday Mr. Hammond and Lieut. Bone started off on the Bristol for Cooden Beach Golf Links, where they both had lunch, afterwards playing a round of golf. Mr. Hammond arrived back at the aerodrome about 4 p.m., finishing up with a very sensational corkscrew dive from 1,000 ft. Later on in the afternoon Mr. Hammond had the misfortune to

smash up on the Bristol. He was doing a *vol plané* over the gas-works, and, after coming down about 300 ft., found the wind was blowing him back out of the aerodrome, so he switched on again, but the engine refused, and he was obliged to land on very rough ground with somewhat disastrous results.

No flying Wednesday was possible owing to the wind being somewhat gusty, but next day Lieut. Bone and Messrs. Foggin and Gassler were down early and had the 28 out, but the engine again gave trouble, one of the main bearings running out shortly after it was started. After the accident the air in the immediate neighbourhood was somewhat sultry, and naturally all three of the above named gentlemen were rather disappointed at not being able to put in any practice. Mr. Fowler made several flights during the course of the afternoon on his Blériot, and Lieut. Minchin was out rolling on the 25 Anzani.

Friday Lieut. Minchin was again out in the evening on the 25 Anzani. He made a number of very good straights and gives promise of being an apt pupil. Mr. Fowler also had his Blériot out and gave several exhibition flights to the spectators.

Lieuts. Brown and Minchin were out early Saturday on the 25-h.p. Anzani. In spite of his long absence, Lieut. Brown made several very good straights, handling the machine extremely well. In the afternoon, the repairs to the Bristol being finished, Mr. Hammond took her out for trial flight, during which he gave the controls a good testing. He then took up in turn all the pupils for air instruction. On his last flight the engine gave out over Hampden Park, and he was obliged to come down. By the time the engine was put right it was too dark and foggy to fly, so the poor Bristol had to be left out all night in a thick fog.

The fog did not lift much before 9.30 a.m. Sunday, when Mr. Lerwill flew the Bristol home. He made an excellent flight in spite of a freshening breeze. Afterwards Mr. Fowler gave Lieut. Brown some instructions in straight flights on the same machine. About 4 p.m., Mr. Lerwill started for a solo on the biplane, the engine, however, commenced to miss almost immediately he left the ground, and, after flying with his tail down for some distance, he switched off, and pancaked badly. The strain was too much for the chassis, which collapsed, letting the machine down on to one of the bottom planes, and badly damaging it. Mr. Thompson joined the school on Saturday, and was given his first flight the same afternoon.

Liverpool Aviation School, Waterloo (near Liverpool).

WEDNESDAY last week, Melly flew the "Y" Anzani to Southport and back, a distance of 35 miles, attaining a height of 1,000 ft. On his return Birch took the same machine up doing a series of flights mostly at 1,000 ft. On Friday Melly gave a series of exhibition flights and Birch followed suit, both rising well over 1,000 ft.

Birch, on Saturday, flew to Hightown and back, his first cross-country flight, but finding it very hazy in land, returned. He made another attempt later when the conditions were slightly improved, and flying inland 3 or 4 miles succeeded in landing at his own home at Sefton, and after having tea there returned to Waterloo. He afterwards gave an exhibition of flying at the aerodrome which lasted 25 mins., during which he executed some remarkable banking and spiral *vol planés*.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—School work on Monday last week started at 9.35 a.m., Messrs. Wilson and Small doing straights. Major Madocks and Mr. Howard-Wright doing circuits with Instructor Noel in rather a puffy wind. Later, Lieut. Small, Major Madocks and Mr. Clark rolling under Mr. Noel's supervision. In the afternoon, when the wind had somewhat abated, Mr. Wilson got in some fine circuits, also did figures of eight under Mr. Lewis Turner; later Messrs. Fuller and Hoelscher did some good flying and started their *brevet* tests.

Tuesday was a very foggy morning; school started 8.30 with Mr. Howard-Wright flying circuits under Instructor Noel. 9.45, still rather misty and windy, but Mr. Wilson doing circuits with Mr. Noel, and later starting *brevet* tests, attaining an altitude of over 200 ft.

7.5 a.m., Wednesday. Lieut. Birch rolling. Messrs. Clark and Howard-Wright doing straights with Instructor Noel. In the afternoon, Lieut. Small straights with Mr. Lewis Turner.

Rather windy Thursday, but good work doing. School out at 6.30. Mr. Howard-Wright doing straights, Lieuts. Birch and Major Madocks rolling, and Mr. Clark, Lieut. Small, Capt. Halahan and Major Madocks doing circuits with Instructor Noel. In the afternoon, Capt. Halahan flying with Mr. Lewis Turner.

On Sunday there was some remarkable exhibition flying by Mr. Grahame-White, carrying two passengers as well as himself on the 70-h.p. Farman. Mr. Noel, on the 80-h.p. was also flying with three up. Lieut. Parke, R.N., who had arrived the previous day on the Handley Page monoplane from Brooklands, but did not fly in the competitions owing to his being on the active list,



Dr. D. Edmund Stodart, jun., M.B., Ch.B., Senior Assistant to Dr. J. J. Pringle at the Middlesex Hospital. The first Australian doctor to fly, who, under the name of "D. Edmund," qualified for his *brevet* at the W. H. Ewen School, Hendon. He passed his tests brilliantly on the 35-h.p. Caudron biplane. Dr. Stodart has also proved himself a most capable flyer on the school monoplanes.

demonstrated the practically automatic stability of this exceedingly bird-like machine. M. Galy, on a 45-h.p. Caudron biplane, and Mr. Pickles on a similar machine of 35-h.p. were carrying passengers. Lieut. Chinnery and Mr. Brock were flying 35-h.p. Deperdussin monoplanes in fine style. Mrs. De Beauvoir Stocks flew a 35-h.p. Blériot, putting up an excellent piece of flying. Mr. Lewis Turner took up passenger after passenger on the 50-h.p. Grahame-White biplane. In fact, from 3 p.m. until dark there was a continuous stream of machines past the enclosure, and those who left the fog of London for the bright sunshine of Hendon were well rewarded.

Blackburn School.—The mist cleared by 8.30 a.m. on Monday last week, when Mr. H. Blackburn commenced school work. Dr. Christie got in some practice with the brevet machine, the while Mr. Scott was using the rolling 'bus for straight flights; all went well with Mr. Scott until finishing a flight with the sun in his eyes and a remnant of mist caused him to mistake No. 2 for No. 1 pylon, and in correcting his direction he landed rather heavily, carrying away a skid, and putting the machine out of commission for the day. Lieut. Spink then proceeded with rolling practice on the brevet machine. Sunday last, the school out at 10.30 a.m., chiefly for the benefit of the week-end pupils. Dr. Christie and Messrs. Buss and Glew doing rolling practice in spite of a stiffish breeze under tuition of Mr. R. Blackburn, designer of the Blackburn machines.

Blériot School.—Messrs. Gandillon, Gratien and Reilly were all hard at work on Monday last week, practically all day, and were much improved in their handling of the machines. M. Gandillon was promoted to LB 3 to do circuits, but there being some wind he contented himself with flying good straights. Messrs. Gratien and Reilly were doing quite well on No. 1 "taxi," and are ready to be promoted to LB 2 for straights. Mr. Sacchi was also employed in doing straights on LB 3.

Tuesday was very foggy in morning, and wind, when fog had cleared, prevented all school work. Next day, Messrs. Reilly and Gratien were working hard on the school taxi, and are improving in their straight lines across the ground.

No school work possible Thursday until evening owing to fog. M. Gandillon then went out for a practice on No. 3, but, together with M. Gratien on No. 2, found the wind still a trifle too strong, and wisely discontinued practice. Friday, very foggy day, and no school work possible. Saturday, the same in morning, although weather kindly cleared up for afternoon meeting.

Deperdussin School.—Weather was very foggy first thing Wednesday morning last week, but as soon as it had lifted somewhat, Instructor Brock took up Dep. No. 4 for a few circuits, but found the air rather bumpy. Messrs. Spratt and Ware and Capt. Tucker each put in eight good straight flights on the same machine. A rapidly increasing side wind, however, made good landings very difficult. In the evening, the wind dropping slightly for a little while, Messrs. Spratt and Ware and Capt. Tucker managed to get in some further practice in straights. Instructor Brock also did a few circuits on No. 4 machine. Mr. Phelps had taxi No. 1 to himself and made four good trips the length of the field and back. Mr. Phelps is a great believer in putting in plenty of ground work.

A rising east wind blew the fog away early Thursday morning, and soon became too strong for school work. W. L. Brock made one circuit on No. 4. Mr. Spratt and Capt. Tucker each did two straights on No. 4. Mr. Phelps and Capt. MacDonald were rolling on taxi 1. W. L. Brock was up for ten minutes in the evening on No. 4. Finding the wind quite steady, Messrs. Ware and Spratt and Capt. Tucker were sent for circuits, the first two making two each. Tucker was forced to come down after his first circuit, due to trouble with his eyes. Mr. Spratt attempted a figure of eight after his first circuit, but drifted towards the sheds, so had to be content with another circuit. All showed great improvement in the way in which they made their turns.

Friday was very foggy. Afternoon, weather too bad for anything.

Saturday morning again too foggy for flying. At noon, fog lifted enough for Instructor Brock to take up No. 3. In afternoon he also took up No. 4, and did good flight. Nardini on two-seater with passenger did some very fine circuits, also entered speed handicap.

Monday morning was bright but windy. Capt. Tucker, Lieut. Brock, Messrs. Phelps, Ware and Whitehouse, all put in appearance, but unable to do any flying. At a little before dusk Brock took out racer and did several very nice circuits at about 200 ft. He also took out the 60-h.p. two-seater and put up circuit after circuit at 200-300 ft., flying very steadily the whole while.

W. H. Ewen School.—After fog lifted on Monday, last week, the pupils were out at 9.30. Mr. L. Russell on monoplane No. 1 making straight rolls and good progress in hopping. Mr. Sydney Pickles on the 35-h.p. Caudron with pupils, on this machine, having a continuous day's practice. Capt. Chamier, Lieut. Eric Conran and Mr. H. James made numerous flights and added considerably

to their experience. In the afternoon Mr. L. Russell and Mr. Lawford put in some good hopping and flying on one of the school monoplanes, while Capt. Chamier, Lieut. Eric Conran and Mr. H. James were continuing their practice on the 35-h.p. Caudron. Another Caudron *brevet* was carried through in the afternoon, when Dr. D. Edmund Stodart, Senior Assistant at the Middlesex Hospital, who has been flying under the name of "D. Edmund," passed his tests in excellent style. Flying at an altitude of 300 ft. he handled the machine beautifully and made some very pretty bank turns. Dr. Stodart while at the school has also shown himself to be quite a capable flyer on the school Blériot and Deperdussin monoplanes. This makes the fourth Caudron *brevet* gained at the school during the last three weeks. In the evening Mr. Pickles did some fine exhibition work on the 35-h.p. Caudron, taking up as passengers Capt. Chamier, Mr. Allan and "Winkles," in one case the combined weight of aviator and passenger being 23 stone.

On Tuesday the wind was too high for school work, Mr. Sydney Pickles during the afternoon, however, made two fine exhibition flights on the 35-h.p. Caudron in a strong wind, in the second switching off at 500 ft. and executing a fine *vol plané* making a good landing.

On Wednesday the pupils were out at 6.30 a.m. and a good morning's work was put in under the instruction of Mr. Pickles, Capt. Chamier and Mr. H. James on the 35-h.p. Caudron, each making ten straight flights keeping the machine perfectly steady in the air and making good landings. In the evening Mr. Pickles was again out with the 35-h.p. Caudron, and after a test flight in which he made some pretty bank turns, the machine was handed over to Capt. Chamier, who made four straights, Mr. H. James four and Lieut. Eric Conran six. Those pupils ought soon to increase the number of Caudron *brevets*.

An early morning start was made at 6.45 Thursday. Mr. Sydney Pickles had the 35-h.p. Caudron out, and after a test flight Capt. Chamier, Lieut. E. Conran and Mr. H. James each made eight straight flights, all adding greatly to their flying experience, the weather being too windy for circuits. In the evening Mr. Pickles was again out with the 35-h.p. Caudron, Lieut. E. Conran and Mr. H. James each making several straight flights with good landings. Mr. Pickles, after a very fine exhibition of flying, gave a passenger flight to Mr. M. Zubiaga, a prospective pupil, who immediately after joined the school.

On Saturday the atmospheric condition was unfavourable for school work. In the afternoon, however, Mr. Pickles made several good exhibition flights on the 35-h.p. Caudron, while M. Galy was on the 45-h.p. Caudron two-seater doing some good solo flying



Mr. Victor Yates, who, on Mr. Fowler's Gnome-Blériot at Eastbourne Aerodrome, secured his *brevet* last month.

and passenger carrying. On Sunday morning, under the instruction of M. Beauman, Mr. Lawford and Mr. L. Russell put in some good practice on monoplane No. 2, doing good straights and flying at 15 feet, making rapid progress.

Jameson and Temple School.—Wednesday last week Mr. Temple out early doing excellent straights and turns, following this up on Saturday with straights with tail up. On Monday Mr. Temple went for his first flight, as a passenger in a biplane, which lasted 35 mins., and a height of 1,600 ft. being reached.

Salisbury Plain.

Bristol School.—Harrison was first out on Monday last week for trial flight finding weather fairly rough, too bad for pupils' solos. Harrison then took Messrs. Greig and Penfold on biplane, afterwards giving tuition to Lieuts. Sabri, Aziz, Fethe, and Solvet. Harrison was again first out in the afternoon, making a trial on biplane with Capt. Lucina as passenger, then out on side-by-side monoplane. Pizey on side-by-side machine with Lieut. Hall, Capt. Lucina, and Lieuts. Sabri and Fethe. Lieut. Hall made a remarkably fine solo on the Bristol tandem monoplane with good landing, this being his first trip alone. England was busily occupied in giving tuition to Lieuts. Sabri, Fazel, Solvet, Aziz and Fethe. Busted made several circuits on two new monoplanes with and without passengers.

On Tuesday, Harrison was out early with Mr. Lywood, but conditions too bad for any school work. No improvement had taken place by evening, and flying was not attempted.

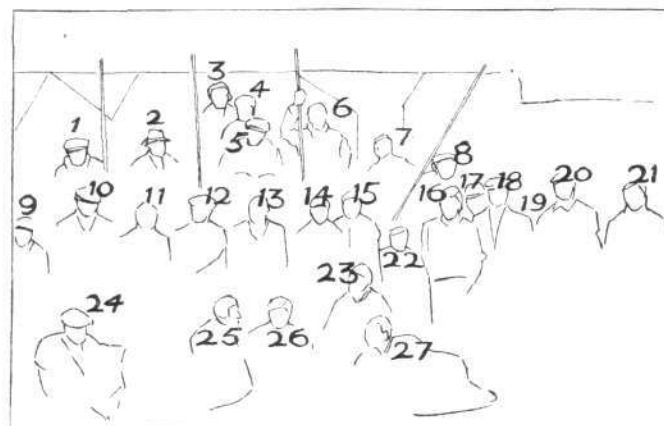
Pizey was first up on Wednesday, taking Capt. Lucina on biplane and Lieut. Hall on side-by-side. Harrison then took Messrs. Lywood and Penfold for tuition, England also taking Mr. Lywood for a flight. Lieut. Hall was out on monoplane and made really clever show, completing several circuits and making a good landing. This pupil should easily pass the tests for his certificate at the next favourable opportunity. Good work was done in the evening, two of the pupils passing the tests for their certificates, these being Capt. Grace and Mr. Bettington. Lieut. Hall was up for a solo, flying extremely well, and Messrs. Penfold and Lywood were taken by Pizey for tuition.

On Thursday, Pizey was on biplane, Jullerot ascending on side-by-side monoplane for trial of conditions, Pizey then took up Lieut. Fielding for tuition, Harrison taking Capt. Lucina afterwards Messrs. Lywood and Penfold. Lieut. Hall successfully accomplished the first part of his certificate flying very well, eventually landing through the density of the fog. School work was again resumed in the evening, Harrison starting off by taking Mr. Lywood. Pizey was out for two trips with Lieut. Fielding, Jullerot being up for a trial on one of the two-seater tandem monoplanes.

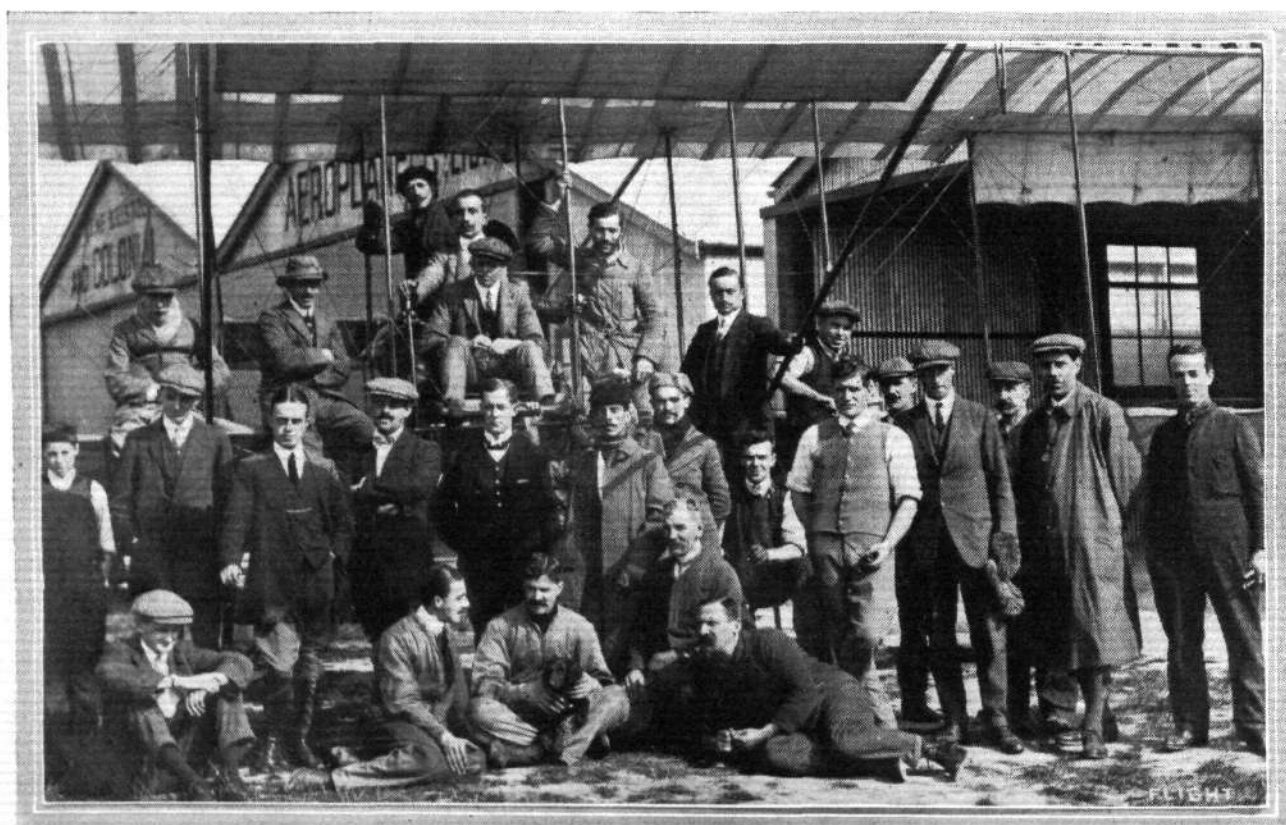
Lieut. Hall then completed the tests for his certificate in very creditable style showing himself to be a flyer of marked ability. This makes the third Bristol pupil gaining his certificate at the Salisbury School this week. Busted was out testing a new monoplane, climbing up to 4,500 ft. and describing several circuits. England was testing a biplane recently erected, this being the last flight made.

There was no flying on Friday morning the fog being very heavy. Still foggy in the afternoon. Pizey went out for trial but work was abandoned.

No flying early Saturday morning due to heavy fog. Later in the morning England made test of air in biplane, afterwards Pizey took Capt. Williams for tuition flight giving pupil many landings,



Key to the group of Bristol School pupils, constructors, and mechanics at Lark Hill, Salisbury Plain.—1. Mr. Lywood (pupil). 2. Capt. Lucina (pupil). 3. "Capt." Penfold (Australian pupil). 4. Lieut. Solvet (Turkish pupil). 5. E. Harrison (pilot instructor). 6. Lieut. Fethe (Turkish pupil). 7. Lieut. Aziz (Turkish pupil). 8, 9, 10, and 11. Staff. 12. H. M. Jullerot (pilot instructor). 13. C. P. Pizey (pilot instructor and school manager). 14. Lieut. Abdullah Ali (Turkish pupil). 15. Lieut. Fazel (Turkish pupil). 16. H. R. Busted (pilot instructor). 17. Staff. 18. Lieut. Bower, R.N. (passed pupil). 19. Staff. 20. V. Bettington (pupil). 21, 22, and 23. Staff. 24. G. England (pilot instructor). 25, 26, and 27. Staff.



A group of Bristol School pupils, constructors, and mechanics at Lark Hill, Salisbury Plain.

thereby being satisfied that this pupil was ready for his first solo. England then took Capt. Penfold and Capt. Kunhardt for tuition flights with landing practice. These being the only pupils present, and weather being unfit for pupils' solos, tuition was suspended till the afternoon. Pizey was first out in the afternoon giving a tuition flight to Lieut. Fielding on side-by-side monoplane. England was also giving tuition flights to Capt. Williams, Kunhardt, Penfold, and Lieut. Shackleton. Pizey was again out with the side-by-side monoplane, having Lieut. Fielding as passenger, after which Capt. Williams had his first experience in piloting a biplane, Pizey sitting behind him. Harrison then gave tuition flight to Lieut. Shackleton, making a flight of some 600 ft., landing with propeller completely stopped, afterwards giving a similar flight to Capt. Williams. Pizey gave a third tuition flight to Lieut. Fielding on the side-by-side monoplane, after which Lieut. Fielding made his first solo on the same machine, which he accomplished very well indeed staying in the air some 20 minutes and making a good landing. Prince Cantacuzene also out for two flights in the tandem monoplane being now quite sure of his landings and flying the machine with great confidence whilst in the air. Jullerot also made a test flight in the tandem monoplane. Busted tested a new monoplane and several pupils made good solos; Capt. Lucina made a fine flight of 400 ft. up.

Capt. Kunhardt was up for a second solo, flying very well. Capt. Williams carried out his first solo, flying very steadily and landing extremely well. Afterwards Capt. Penfold made a solo in the same good style. Lieut. Parker and Wall, with Mr. Lywood each made two very good flights.

✱ ✱ ✱ ✱ ROYAL FLYING CORPS.

IN the Army List for October, the Royal Flying Corps for the first time finds a place. Although we have from time to time recorded the appointment of the various officers, this provides an excellent opportunity for reprinting the complete list. Below will be found details of the Corps as they appear in the current Army List. The figures in brackets are the dates of appointment:—

CENTRAL FLYING SCHOOL (Upavon, Salisbury Plain).

Commandant—Capt. G. M. Paine, M.V.O., R.N. (15.5.12)
Secretary—Asst. Paymr. J. N. Lidderdale, R.N. (15.5.12)
Medical Officer—Capt. R. H. L. Cordner, R.A.M.C. (temp.) (15.5.12)
Quartermaster—Hon. Lieut. F. H. Kirkby, Qrmr. (20.5.12)
Instructor in Theory and Construction—Col. H. R. Cook, R.A. (20.5.12)
Instructors in Flying—
 Lieut. A. M. Longmore, R.N. (15.5.12)
 Capt. (temp. Maj.) E. L. Gerrard, R.M. (15.5.12)
 Capt. J. D. B. Fulton, R.A. (L.) (20.5.12)
 Capt. P. W. L. Broke-Smith, R.E. (20.5.12)
Inspector of Engines—Eng.-Lieut. C. R. J. Randall, R.N. (15.5.12)

MILITARY WING

(Headquarters, South Farnborough).

Officer Commandant in charge of Records—Capt. (temp. Maj.) F. H. Sykes, 15th Hrs. (13.5.12)
Assistant do.—Maj. W. E. S. Burch (Res. of Off.) (24.6.12)

1st Squadron ...	Airships, kites ...	South Farnborough.
2nd " ...	Aeroplanes ...	Salisbury Plain.
3rd " ...	" ...	" "
4th " ...	" ...	South Farnborough.
5th, 6th, 7th and 8th not yet formed.		
Flying Depot, L. of C. ...		"

Squadron Commanders—

d Capt. (temp. Maj.) A. D. Carden, R.E. (20.5.12)
 3 Capt. (temp. Maj.) H. R. M. Brooke-Popham, Oxf. and Bucks L.I. (20.5.12)
 2 Capt. (temp. Maj.) C. J. Burke, R. Irish (20.5.12)
 1 Capt. (temp. Maj.) E. M. Maitland, Essex (20.5.12)

Aeroplanes of the British Army.

IN the House of Commons last week, Col. Seely, in reply to a question by Mr. Joynson Hicks, made the definite announcement that there is no intention of utilising the Royal Aircraft Factory for the manufacture of aeroplanes on a large scale. In reply to a further question, Col. Seely stated that 29 aeroplanes are due from British firms, six have been ordered from abroad through a British firm, who will in future manufacture in this country, and one is due directly from abroad.

Capt. Kunhardt, Lucina, Williams, Lieuts. Parker and Wall and also Mr. Lywood should take their certificate in the next few days if the weather is favourable. All of these pupils have been putting up really good flights, and fine evidence is thus appended of the kind of tuition meted out to pupils at the Bristol School.

Royal Flying Corps.—Although thick fog somewhat curtailed flying on two or three days of last week, the Royal Flying Corps was very active at every suitable opportunity, and the two factory-built biplanes and Maurice Farman biplane had a very strenuous time in the hands of Major Brooke-Popham, Capt. Allen, Capt. Dawes, Lieuts. Fox, Ashton, Wadham, Lawrence, &c., while a large number of non-commissioned officers and men have been undergoing training. One of the best performances of the week was seen on Thursday afternoon, when Lieut. Fox took biplane 203 to a height of 4,600 ft. and came down by a spiral *vol plané* with the engine shut off, making seven complete circuits in his descent. Another good flight was on Saturday, when Capt. Dawes was up for 50 mins. at a height of 1,000 ft. on the Maurice Farman biplane. On this machine Lieut. Ashton with Capt. Dawes, and Lieut. Lawrence with Lieut. Arthur on biplane 205, went over to Tidmouth Barracks in the afternoon for tea. Several visits have been paid by "the aerial way" to the C.F.S. at Upavon. Some idea of the work done can be gathered from the fact that on Friday evening 14 separate flights were made, while on the previous evening the machines were in the air a dozen times. The Dunne biplane was out on Saturday morning for testing, but the engine was not in a very good humour.

Flight Commanders—

3 Capt. C. R. W. Allen, Welsh (1.7.12)
 2 Capt. G. H. Raleigh, Essex (1.7.12)
 3 Lieut. (temp. Capt.) B. R. W. Beor, R.A. (1.7.12)
 3 Lieut. (temp. Capt.) D. G. Conner, R.A. (1.7.12)
 1 Lieut. (temp. Capt.) C. M. Waterlow, R.E. (1.7.12)
 2 Lieut. (temp. Capt.) H. R. P. Reynolds, R.E. (1.7.12)

Flying Officers—

2 Capt. G. W. P. Dawes, Berks (13.5.12)
 2 Lieut. C. A. H. Longcroft, Welsh (13.5.12)
 2 Lieut. G. B. Haynes, R.A. (13.5.12)
 1 Lieut. T. G. Hetherington, 18th Hrs. (13.5.12)
 2 Lieut. G. T. Porter, R.A. (13.5.12)
 2 Lieut. C. T. Carfrae, R.A. (13.5.12)
 3 Lieut. A. G. Fox, R.E. (13.5.12)
 1 Lieut. J. N. Fletcher, R.E. (13.5.12)
Adjutant—Lieut. B. H. Barrington-Kennett, Gren. Gds. (20.6.12)
Quartermaster—Hon. Lieut. W. J. D. Pryce, Qrmr. (20.6.12)

Reserve.

Col. (temp. Brig.-Gen.) D. C. B. Henderson, D.S.O. (Direc. Mil. Training (21.9.12)
 Lieut. O. G. Bell, Spec. Res. R.F.C.

Special Reserve.

R. L. Charteris (17.7.12)	D. G. Young (27.7.12)
R. O. Abercromby (17.7.12)	R. R. S. Barry (10.8.12)
D. Corbett Wilson (20.7.12)	W. E. Gibson (4.9.12)
T. O'B. Hubbard (27.7.12)	M. R. N. Jennings (11.9.12)
H. D. Cutler (27.7.12)	C. P. Pizey (21.9.12)

ROYAL AIRCRAFT FACTORY (South Farnborough).

Superintendent—M. O'Gorman, Esq. (19.10.09)

The following appointment was announced in the *London Gazette* of the 15th inst.:—

Special Reserve of Officers. Royal Flying Corps. Military Wing.—Geoffrey de Havilland to be Second Lieutenant (on probation). Dated October 16th, 1912.

The following was announced by the Admiralty on the 11th inst.:—

Lieut. R. B. Davis to the "Actean," additional, for Aviation Course.

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The Willows Naval Airship.

THE Baby dirigible built by Messrs. E. T. Willows, of Cardiff, for the British Navy, has made a very favourable impression at Farnborough. The little torpedo-shaped car, for the pilot and his assistant, which is slung beneath the main beam running fore and aft, gives the aircraft a very smart and business-like appearance, and the 35-h.p. Anzani engine, driving two four-bladed Rapid propellers has shown itself capable of giving the airship a speed of over 50 miles an hour.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Committee Meeting.

A MEETING of the Committee was held on Tuesday, the 15th inst., when there were present:—Sir Charles D. Rose, Bart., M.P., in the Chair, Mr. Griffith Brewer, Col. H. C. L. Holden, C.B., F.R.S., Prof. A. K. Huntington, Mr. F. K. McClean, Mr. J. T. C. Moore-Brabazon, Mr. Mervyn O'Gorman, Mr. C. F. Pollock, Mr. R. W. Wallace, K.C., and the Secretary.

New Members.—The following new members were elected:—M. G. Christie, W. H. Harrison, William Snowdon Hedley, Lieut. A. C. H. MacLean, Henry G. Melly, D. W. Powell, Capt. C. L. Price, Lieut. H. D. Seward, and Lieut. Frederick Ernest Styles. Total membership to date 1,450.

Aviators' Certificates.—The following aviators' certificates were granted:—

314. A. M. Wynne (Grahame-White biplane, Grahame-White School, Hendon).
315. John Herbert James (Caudron biplane, Ewen School, Hendon).
316. Lieut. G. I. Carmichael, R.F.A. (Bristol biplane, Bristol School, Brooklands).
317. 1st Air Mechanic V. C. Higginbottom (Avro biplane, Central Flying School, Upavon).
318. 2nd Lieut. D. L. Allen, 87th Royal Irish Fusiliers (Grahame-White biplane, Grahame-White School, Hendon).
319. Lieut. L. Loultcheff, Bulgarian Army (Bristol biplane, Bristol School, Brooklands).
320. Lieut. R. G. H. Murray, 9th Gurkha Rifles (Bristol biplane, Eastbourne Aviation School, Eastbourne).
321. Dr. D. E. Stodart (Caudron biplane, Ewen School, Hendon).
322. Edward Birch (Blériot monoplane, Melly School, Waterloo, Liverpool).
323. W. L. Hardman (Blériot monoplane, Melly School, Waterloo, Liverpool).
324. Rudolph Holscher (Grahame-White biplane, Grahame-White School, Hendon).
Subject to sanction of Aero Club of Germany.
325. E. N. Fuller (Grahame-White biplane, Grahame-White School, Hendon).
326. A. V. Bettington (Bristol monoplane, Bristol School, Salisbury Plain).
327. Capt. R. S. H. Grace (13th Hussars), (Bristol biplane, Bristol School, Salisbury Plain).
328. Lieut. C. L. Courtney, R.N. (Short biplane, Royal Naval Aviation School, Eastchurch).
329. C. W. Wilson (Grahame-White biplane, Grahame-White School, Hendon).
330. Paymaster E. R. Berne, R.N. (Short biplane, Royal Naval Aviation School, Eastchurch).
331. Howard Theophilus Wright (Farman biplane, Sopwith School, Brooklands).
332. Harold Wesley Hall (Bristol monoplane, Bristol School, Salisbury Plain).
333. Albert Deakin (Electrician, R.N.), (Short biplane, Royal Naval Aviation School, Eastchurch).
334. Henry C. Bobbett (Boatswain, R.N.), (Short biplane, Royal Naval Aviation School, Eastchurch).

British Empire Michelin Cup No. 2.

The competition for this year's prize of £600 closed on Tuesday last, the 15th inst. Mr. S. F. Cody was the only competitor who made the cross-country circuit of 186 miles in accordance with the rules. The Committee, after examining the Observers' Reports and Certificates relating to the aeroplane, unanimously awarded the prize of £600 and trophy offered by the Michelin Tyre Co. to Mr. S. F. Cody.

Copenhagen to Stockholm Flight.

SOME time ago a prize of £800 was offered for the first aviator to fly from Copenhagen to Stockholm, a distance of 700 kiloms. within 24 hours, the feat to be accomplished by October 13th. Two entries were received, one from the Swedish lieutenant, Dahlbeck, with a Sommer monoplane, and the other from the Danish lieutenant, Ussing, a Farman biplane pilot. Both made trials on the 9th inst. at Copenhagen, but neither were able to get

Mr. Cody made two attempts, and his successful flight took place on Saturday, the 12th inst., over the following circuit:—

Laffans Plain, Larkhill, Newhaven, Brooklands, Laffans Plain. Starting at 11.50 a.m., the complete circuit was accomplished without alighting, at 3.16 p.m.

The following are the specifications relating to the all-British aeroplane used by Mr. S. F. Cody:—

Cody biplane; motor, 100-h.p. Green; carburettor, Zenith; magneto, British Bosch; sparking plugs, Pyramid; propeller, Cody.

The Royal Aero Club wishes to record its thanks to the following gentlemen who kindly acted as official observers in connection with the Competition:—

Lieut. C. Longcroft, R.F.C., Laffans Plain; Major R. Brooke-Popham, R.F.C., Larkhill; O. Mellersh, Newhaven; and G. Handasyde, Brooklands.

British Empire Michelin Cup No. 1.

The Competition for this year closes on Thursday, October 31st, 1912.

The winner of the prize of £500 for the year 1912 shall be the competitor who, on or before October 31st, 1912, shall have remained the longest time in the air on an aeroplane in one flight without touching the ground. The flights may only be made between the hours of sunrise and one hour after sunset, and in order to qualify for the prize the competitor must make a continuous flight of at least five hours.

The entrant, who must be the person operating the machine, must be a British subject, flying on a British-made aeroplane, must hold an Aviator's Certificate, and must be duly entered on the Competitor's Register of the Royal Aero Club.

Rules and entry forms can be had on application to the Club.

Entries have been received as follows:—

Entrant.	Aeroplane.	Motor.
R. L. Charteris ...	Avro biplane...	A.B.C.
S. F. Cody ..	Cody biplane ...	Green.
H. G. Hawker ...	Sopwith biplane ...	A.B.C.
Arthur Knight ...	Vickers monoplane ...	Vickers R.E.P.
Alec Ogilvie ...	Wright biplane ...	N.E.C.
F. P. Raynham ...	Avro biplane...	Green.

The first attempt for this prize was made by H. G. Hawker on a Sopwith biplane on Wednesday last at Brooklands, who remained in the air for 3 hrs. 31 mins.

British Empire Michelin Cup No. 1.

	Distance.
1909. £500, winner J. T. C. Moore-Brabazon	19 miles.
1910. £500, winner S. F. Cody	185 miles 787 yds.
1911. £500, winner S. F. Cody	261 miles 810 yds.

British Empire Michelin Cup No. 2. Time.

1911. £400, winner S. F. Cody, 125-mile circuit...	3h. 6½m.
1912. £600, winner S. F. Cody, 186-mile circuit...	3h. 23m. 15s.

The International Aero Exhibition, Paris.

In connection with the International Aero Exhibition which takes place in Paris, October 26th–November 10th, 1912, the South-Eastern Railway will issue week-end tickets on October 25th, 31st, and November 8th, available to return up to, and including, Tuesday following the date of issue by the short sea routes *via* Dover and Calais, and Folkestone and Boulogne. The week-end tickets are available on the above dates by the 10 a.m. train from Charing Cross arriving Paris 5.20 p.m., the 2.20 p.m. reaching Paris at 11.25 p.m., and the 9 p.m. train arriving Paris 5.40 a.m. The return trains from Paris are the 8.25 a.m., 2.30 p.m. and the 9.20 p.m.

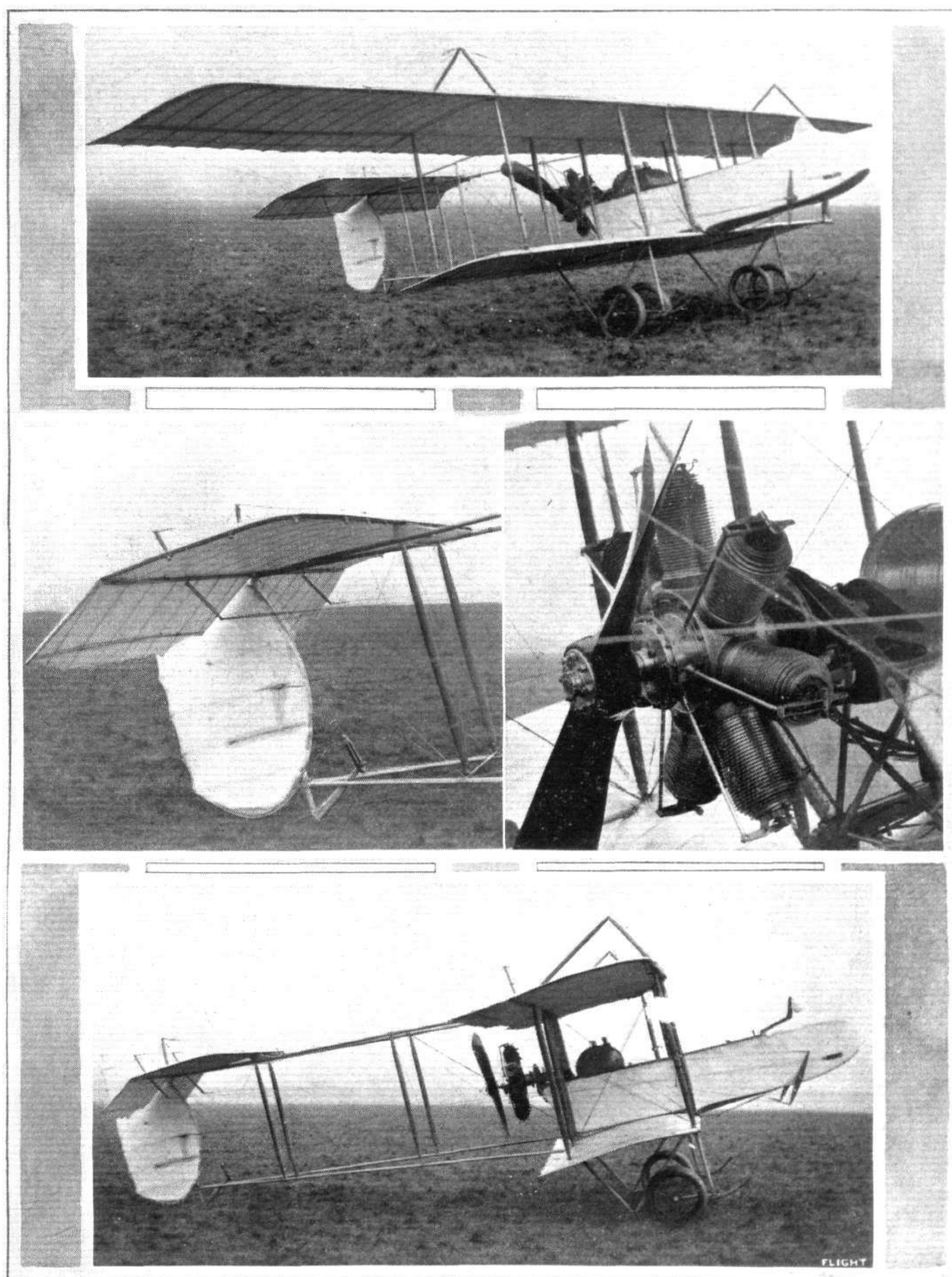
The Return Fares are: First Class, £2 18s. 4d.; Second Class, £1 17s. 6d.; and Third Class £1 10s.

166, Piccadilly.

HAROLD E. PERRIN, Secretary.

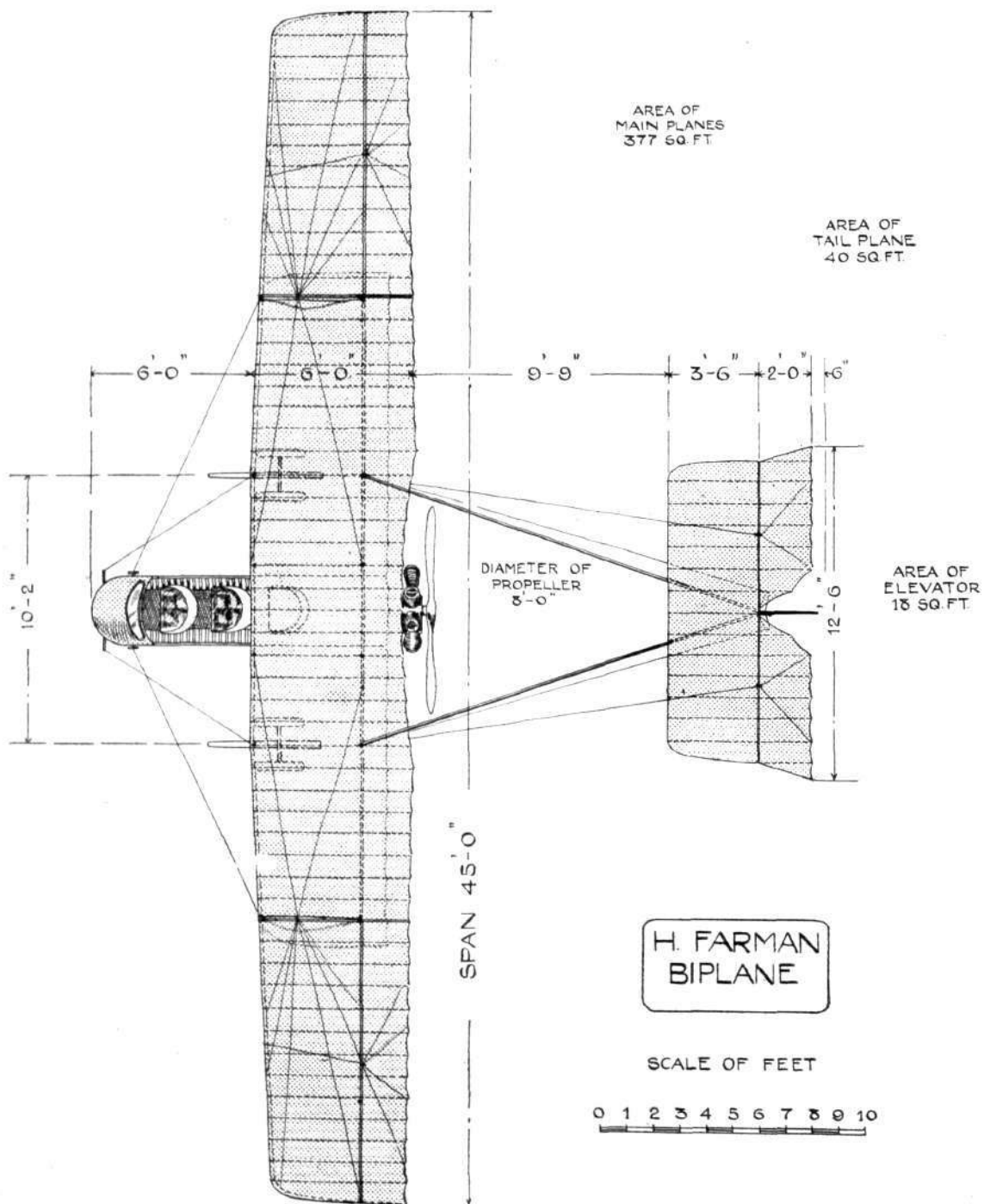
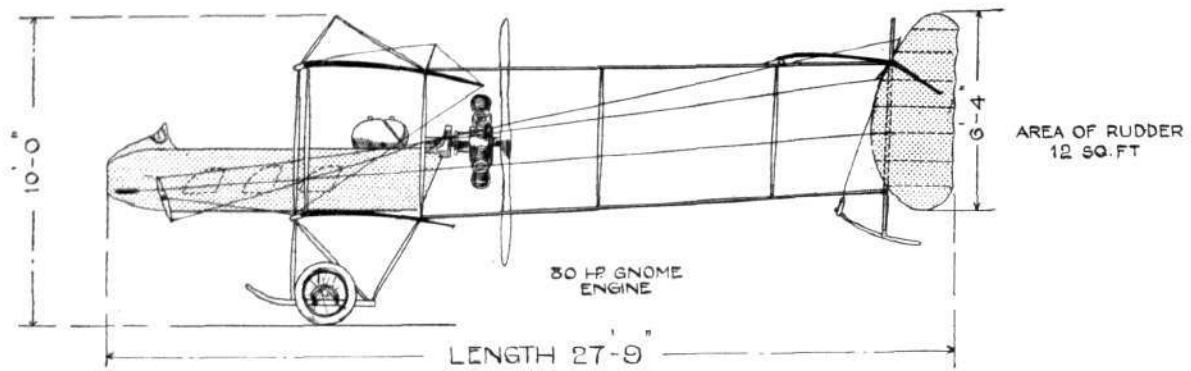
away, motor troubles keeping Dahlbeck, while after a trial flight Ussing landed rather badly and damaged his machine.

On the 10th, Lieut. Dahlbeck started from Copenhagen at 2.22, and flying across the Sound at a height of 500 metres he arrived over Swedish soil at Landskrona. His first stop was at Markaryd, at 3.20, having taken just on an hour for the first stage of 100 kiloms. Owing to the mist on the following day he was not able to make a fresh start until 4.20 in the afternoon, and then after an hour and a half's flying he arrived at Jonkoping, having covered 165 kiloms.



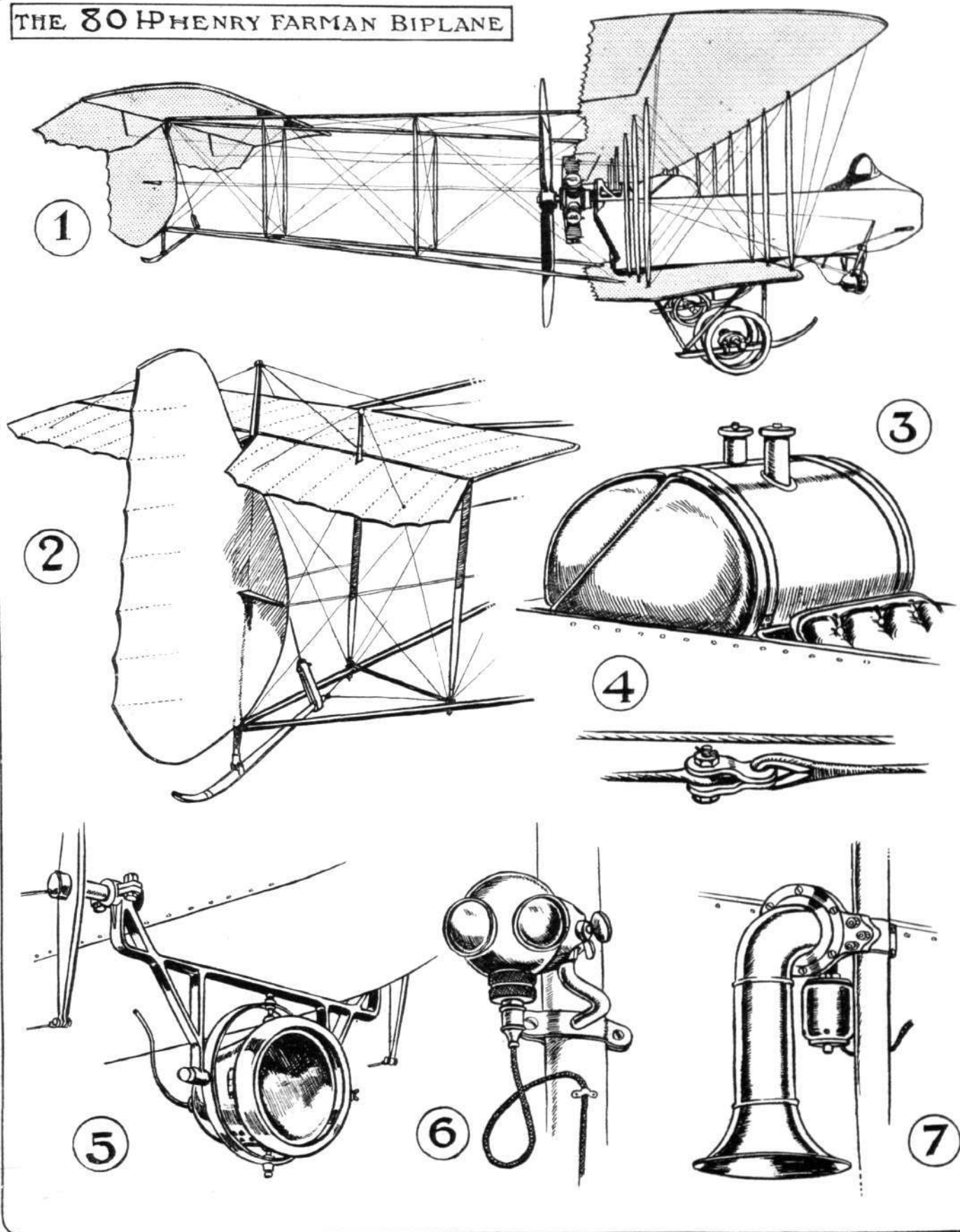
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The 80-h.p. Henry Farman biplane, showing in detail the tail formation and engine mounting.



HENRY FARMAN BIPLANE.—Plan and elevation to scale.

THE 80 HENRY FARMAN BIPLANE



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The 80-h.p. Henry Farman biplane and its electric light and Klaxon horn fittings.—Fig. 1.—Side view. Fig. 2.—Empennage, showing the new rudder shape. Fig. 3.—Petrol and castor oil tanks. Fig. 4.—Control cable joint. Fig. 5.—Electric searchlight. Fig. 6.—Electric side lights. Fig. 7.—Klaxon electric horn.

A NEW HENRY FARMAN BIPLANE.

ACCESSORIES such as lamps and hooters, which form a by no means insignificant feature of the modern motor car, have as yet been absent from the aeroplane, but there is a machine down at Hendon just now belonging to the Grahame-White Co. which attracts considerable attention in its possession of these fittings, and among the sketches we give this week are two or three showing the aforementioned *etceteras*. As a matter of fact, however, they are of comparatively minor interest on a machine like the Henry Farman, notwithstanding that it has long been one of the most universally well-known flyers in existence. This particular model, as it happens, is a new design to the extent of having one of the latest 80-h.p. Gnome engines, and although built on the same lines is much smaller in size than the 70-h.p. biplane that has been doing such good missionary work in the country with its "Wake Up England" motto. It is designed for a speed somewhere in the order of 60 miles an hour, and, constructionally, it is characterised by the great superiority of the span of the upper plane as compared with the lower. Indeed, the upper plane is almost twice the span of the lower plane. Its *ailerons* or balancing flaps, too, occupy the whole length of the trailing edges of the upper main plane extensions.

At the rear, a slight modification will be noticed in the shape of the rudder, which has a curved entering edge, carried forward of the

rudder post. Near the engine, a little detail of interest is the very neatly-arranged combined petrol and oil-tank, which has a capacity for 15 gallons of fuel and 7 gallons of castor oil. This feature forms the subject of one of our sketches, as also does one of the nicely-made joints in the control wires.

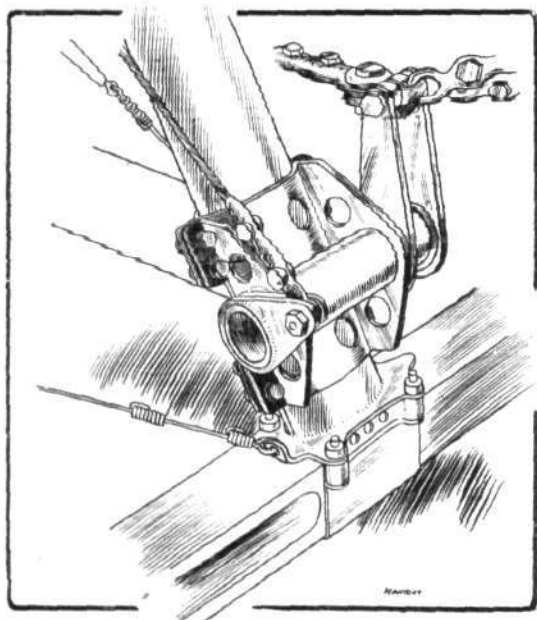
Henry Farman Biplane.

	Metres.	ft.	in.		Metres.	ft.	in.
Upper main plane—				Elevators—			
Span ...	13'50	(45	0)	Length ...	1'75	(5	9)
Chord ...	1'90	(6	0)	Chord ...	0'52	(2	0)
Lower main plane—				Rudder—			
Span ...	7'50	(24	7)	Height ...	1'85	(6	4)
Chord ...	1'45	(4	9)	Chord ...	0'80	(2	7½)
Distance between main planes ...	1'40	(4	7)	Propeller—			
Ailerons—				Diameter ...	2'60	(8	0)
Length ...	3'0	(19	10)	Pitch ...	1'90	(6	0)
Chord ...	0'42	(1	4½)	Weight (with pilot, fuel, and oil, but without passengers) ...	900	lbs.	
Fixed tail plane—				Flying speed ...	62	m.p.h.	
Span ...	3'50	(11	5)				
Chord ...	1'0	(3	6)				

THE HANRIOT MONOPLANE.

It is not surprising that the new Hanriot monoplane has a great deal in common with the Nieuport, for the reason that its designs are due to M. Pagny, who had collaborated with M. Edouard Nieuport in producing the latter's monoplane. There are refinements of design noticeable throughout in the new Hanriot, but the main differences are centred at the landing chassis—the shape of the stabilizer, and the operation of the controls. Let us therefore deal

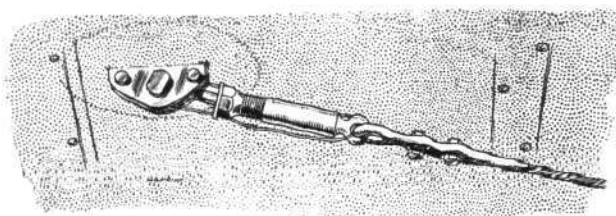
Another advantage this chassis has is that it extends sufficiently far back to enable the rear struts to serve as a point from which the wing warping may be operated. In this manner the more or less



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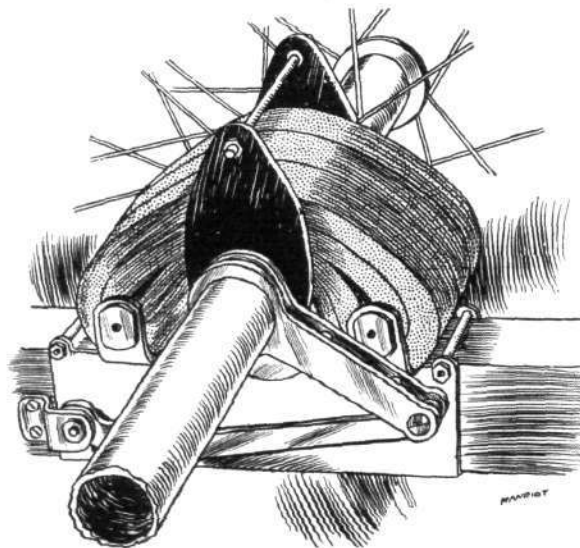
Sketch showing how the warping is geared up by means of a bell crank on the Hanriot monoplane. It also shows the type of socket by which the chassis-struts are assembled to the landing-skids,

with these first. Recognising the difficulty that not a few pilots have experienced in using the Nieuport chassis, the Hanriot firm have been most wise in adopting a form of landing gear that is, we might almost say "fool proof." It consists simply of an orthodox pair of skids with an orthodox pair of wheels strapped down to them by elastic bands. But even in such a much used form of chassis there has been introduced a very useful refinement. In place of the usual plain types of radius rod, a system of tie rods is used, whereby the axle carrying the landing wheels may travel, when the wheels encounter a bump, in a straight vertical path. With the ordinary type of radius rod the axle travels along an arc of a circle, a movement which is none too kind to the rubber straps employed. One of our sketches illustrates this point.



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The method of attaching the wing-cables on the Hanriot monoplane.



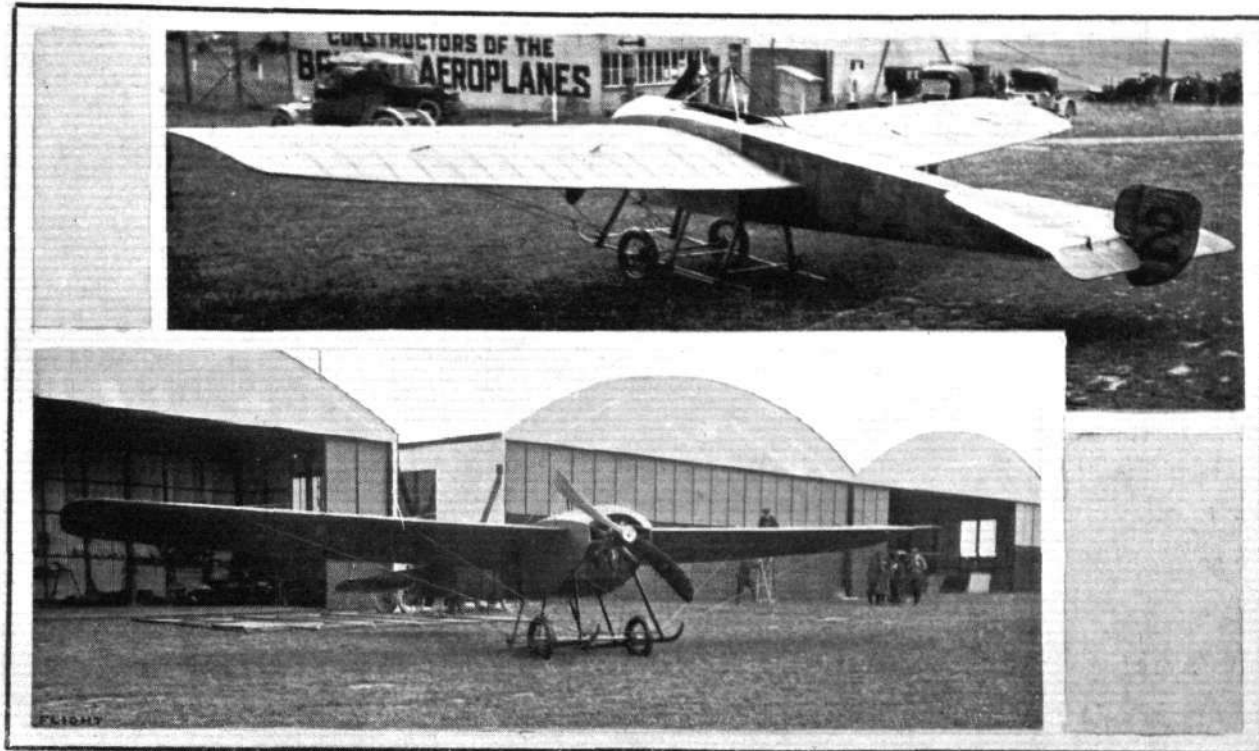
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The clever double-crank radius-rods of the Hanriot chassis, showing the neat unit they form with the shock-absorbers.

customary form of lower *cabane* is done away with—and the head resistance that it would give rise to also.

One of our sketches shows one of the two bell cranks, one on either side, through which the warping is actuated. It is rather noticeable that the warp is geared up, for the arm taking the control wire is shorter than the other.

As for the wings, they are, to outside appearance, so exactly like those of the Nieuport that there is little need to describe them.



Two views of the 100-h.p. Hanriot monoplane.

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They have the refinement that provision is made whereby they may be folded, for convenience sake, along the side of the fuselage.

The upper *cabane* has a very good point about it. The top wires from the wings pass through a fitting which may be adjusted in relation to the *cabane* skeleton. By this system the top wires can be dismantled very easily and their tautness can as simply be varied. The stabilizer is made so that it may fold down readily in two halves. Each half is hinged to a tube running parallel to, and on a level with each top member of the fuselage at the rear. It is kept up in place by wires when in use. The rudder, too, folds in neatly.

Naturally, when a new machine makes its appearance, everyone who has anything to do with aeroplanes makes it his business

to "quizz around," criticise and communicate the result of his inspection to anyone who may be similarly interested.

Everyone on the Plain had a good look round the Hanriot, but, for once, no criticism reached our ears. But there, perhaps, we are wrong—we heard one of the official passengers in the three hours' duration test relate that his neck had got seriously out of truth through having to resist, for such an extended period, the pressure of the relative wind. The 100-h.p. Hanriot monoplane averages a speed of about 73 m.p.h.

Main characteristics:—

Length	...	24 ft.	Span	...	41 ft. 9 ins.
Weight without comple-	...		Motor	...	100-h.p. Gnome
ment or fuel	...	981 lbs.	Propeller	...	Chauvière 2'55 m. diam.

THE "TEL" REVOLUTION INDICATOR FOR AIRCRAFT.

We show in the accompanying illustration an ingeniously designed instrument which is new only in the sense of its latest application to aircraft. The "Tel" indicator, as it is called, is manufactured by the Haslar Telegraph Works, of 26, Victoria Street, London, S.W., and is designed for indicating the revolutions per minute of engines or propellers of aeroplanes or airships, and it is similar in its principle of working to the "Tel" instruments manufactured for use on locomotives and trams, in which connection they are well known to engineers.

One feature that is of considerable importance in connection with aeroplanes is that the indicating needle is re-set every second if the speed is not absolutely constant, thereby giving a correct indication of the speed of the engine or propeller at all times.

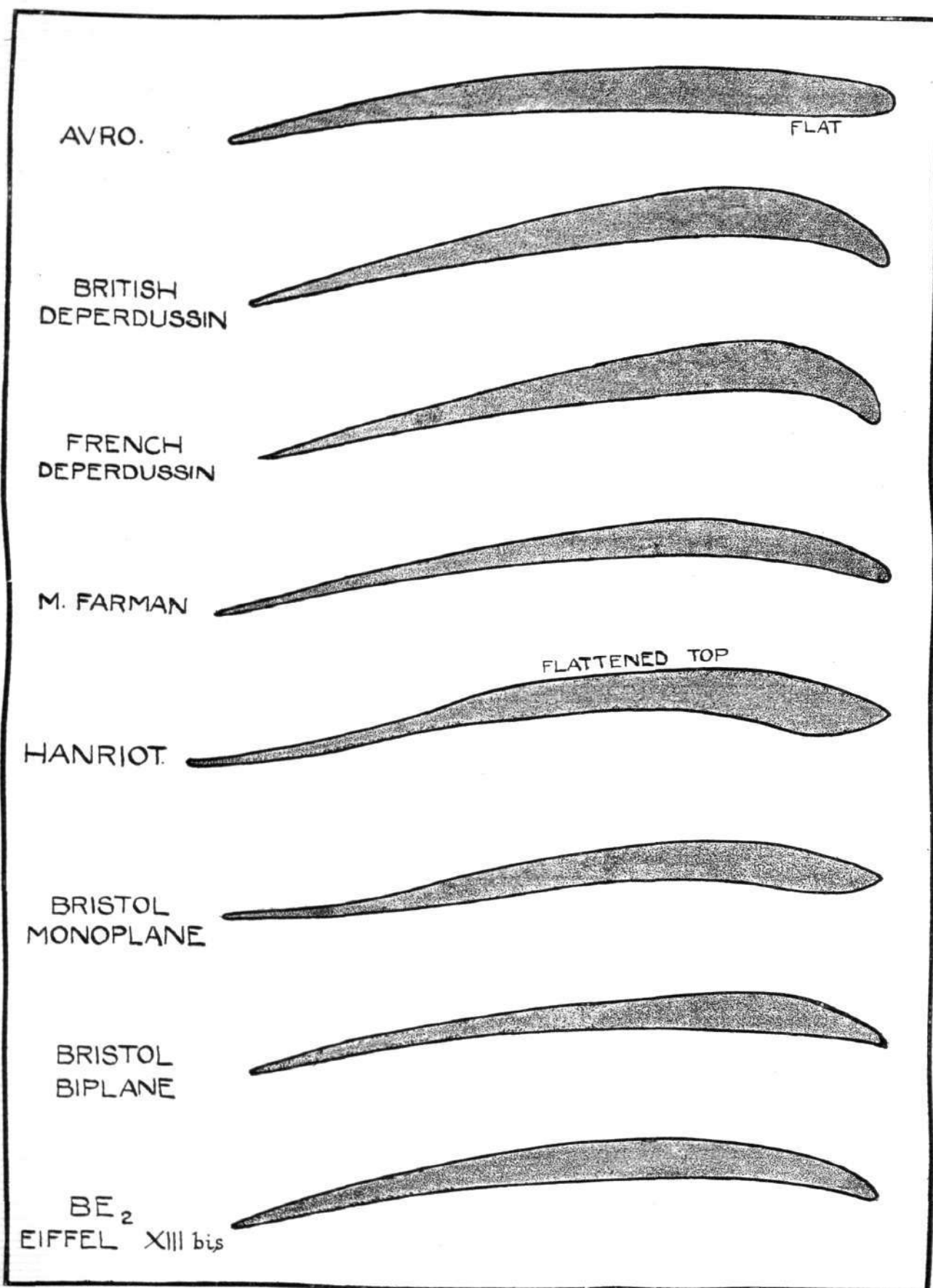
The two views on the left of our illustration show the instrument complete, together with the gear-box as is used in a Gnome engine installation; while on the right is a view of the interior of the instrument, showing the mechanism as seen when the back is taken off, and below the component parts of the gear-box are illustrated.

In the case of a slow-running engine, the instrument can be connected direct, without the gear-box, and, of course, it all depends upon the make and position of the engine as to what part of the latter the drive is taken. We understand that several of these instruments are already in use on aeroplanes, both at home and abroad, one being fitted to

the Hanriot that recently took part in the Military Competition.

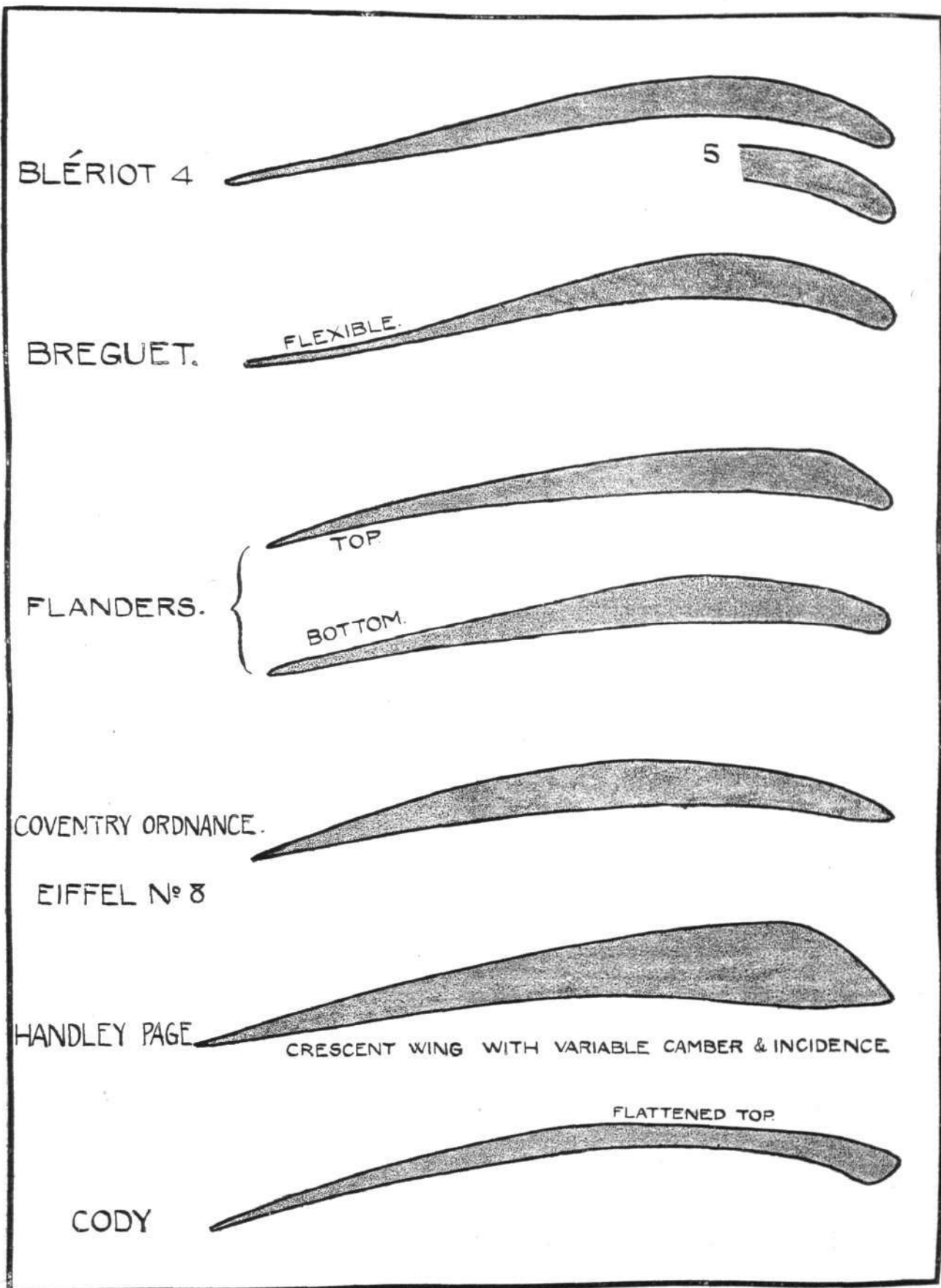


The "Tel" revolution indicator, as fitted to a Gnome engine, when a gear-box has to be used. The photographs on the right show the interior of the instrument and the gear-box taken apart.



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DESIGNERS' AUTOGRAPHS IN WING SECTIONS.—The above sketches make no pretence at accuracy as to proportion, but having in most cases been drawn by the designer, or at any rate with his assistance, they do serve to show the characteristic feature of the wing section, and in so far as there is such a great difference between the wings of different machines, we thought it would be interesting to publish them.



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DESIGNERS' AUTOGRAPHS IN WING SECTIONS.—Two very interesting wings on this page are the Handley Page and the Cody, the one full bodied and the other with a wasp-like waist. Between such extremes, it is no wonder that almost any wing section seems to give reasonably good results. The Breguet is a flexible wing carried on a single spar about which it can rock against the action of internal springs.

MODERN WING SECTIONS.

THE sectional sketches of wings that occupy pages 944 and 945 of this issue are published in the interests of those who are unable to attend the various centres where they might frequently see the actual machines on which the wings in question exist; but they are not published with any pretence at being geometrically accurate, for the conditions under which they were prepared scarcely permitted more than a resemblance to the reality to be obtained. It was down at Salisbury Plain during the Military Aeroplane Trials that these sketches were made, and they originated from a desire to compare the salient points of the wing sections of the various competing machines. When you try to remember features of this kind while wandering from one machine to another, you are more than apt to become hopelessly confused by the time you have inspected a dozen or so, unless you make a point of putting down on paper the characteristics that strike you about each wing while you see it.

And each of the wings illustrated does certainly possess the characteristics that are most prominent in these rough sketches, notwithstanding that the sketches themselves may be much out of scale. In some cases, they were made by the designers themselves, but in all cases they were at least drawn with the assistance of some responsible person who was thoroughly familiar with the machine. Thus, notwithstanding their inaccuracy as scale drawings, they may fairly be regarded as characteristic pictures of what the eye sees when looking at the wings. Directly one has collected a set of sketches like these, their interest is self-evident, for it would be difficult to imagine any collection with more diverse characteristics. Moreover, what is so interesting about the matter is that every designer seems to put great faith in the virtues of his particular wing section, and yet, to judge from the variety of contours in this collection, one might be pardoned for doubting whether any one of them possessed merit above another. At any rate, they all fly, so whatever special quality may appertain to particular shapes it would seem that its investigation is more properly related to laboratory research, such as, for example, that conducted so patiently by M. Eiffel—and even his results, some people consider, should be read with discretion.

In the matter of these sketches, however, it is not our purpose to attempt to dilate upon the merits or otherwise of the wings represented; it suffices to draw attention to the extraordinary differences between one wing and another. Indeed, although the wings illustrated cover practically all the important aeroplanes in the Trials there are scarcely two sections alike. The closest resemblance appears to be between the Bristol monoplane and the Hanriot, both of which have a peculiar entry causing a reversal of curvature under the front main spar. The Hanriot has a flattened top, which appears less pronounced in the Bristol monoplane,



Col. Cody Again Wins Michelin Cup No. 2.

ON Saturday last Col. Cody succeeded in flying round one of the stipulated courses for the British Empire Michelin Cup No. 2, and as he was the only one to comply with the conditions—which stipulated that the machine and engine must be all-British and piloted by a British subject—he has now been awarded the prize. Starting from Farnborough at 11.50 a.m., on the machine which won the recent Military Trials, which has now been fitted with a 100-h.p. Green engine, he made Salisbury Plain without incident, and then got somewhat off his course owing to the fog, and found himself over the sea at Southampton instead of Newhaven. He, however, followed the coast to Newhaven, and from there had no difficulty in

where the camber is gradual but appears to be regularly maintained. Both wings have a slight reversal of curvature in the run so that the trailing edge is, as it were, washed out. The trailing edges of these wings, however, are not specially flexible, as it is on the Breguet for instance, where a somewhat similar characteristic is noticeable, then considering the Breguet section, it must be borne in mind that the ribs only have to contend with one main spar, to which they are attached by spring-like hinges. The necessity of encircling two spars, governs very largely the shape of any wing section that can be satisfactorily constructed, and especially is this the case when the spars lie far apart or when they are of equal depth. The Avro is an example of a wing section surrounding two spars of equal size, and is a perfectly rigid rib from entry to trail. The under surface at the point of its entry is flat. Two other examples of wing sections that tend to facilitate equality of spar section are the Eiffel curves used on BE 2 and the Coventry Ordnance. Of these XIII bis brings the maximum top camber further forward than is the case with No. 8.

There is an interesting distinction between the top and bottom planes of the Flanders biplane, but in most of the other biplanes the top and bottom members seem to be alike. There were, however, some slight distinctions between the wings of different monoplanes of the same make, as, for instance, may be seen by comparing the British with the French Deperdussin and Blériot No. 4 with Blériot No. 5. The French Deperdussin has a slightly more pronounced dip on its leading edge than the British model, and the same remark applies to the Blériot sociable as compared with the Blériot tandem.

Two of the most extraordinary wing sections are the Handley Page and the Cody, especially when seen together as they are in these sketches. The Handley Page has an immense depth of front spar but it must be remembered that the wing is crescent shaped and that the camber as well as the angle of incidence varies from shoulder to tip. At the tip it is almost entirely a washout, and the object of the design is to produce a well graded loading over the span. Compared with the Handley Page, the Cody looks a very lean rib, especially as it has a flattened top surface between the spars, which gives it a kind of waist. The under surface of the Cody is one continuous smooth curve from behind the front spar. It is interesting to note the similarity of characteristics, but on an entirely different scale, between the Cody and the Hanriot, both in respect to the flattening of the top surface and in the shape of the entering edge. Whereas most wing sections are designed to drop the top surface sharply downwards to meet the bottom surface at the point of entry, the wing sections just mentioned reverse this principle by curving the under surface sharply upwards round the front spar.



finding his way, *via* Brooklands, to Farnborough, where he arrived at 3.16 p.m., having taken 3 hrs. 26 mins. for the trip, the official distance being 186 miles.

A Try for British Michelin Cup No. 1.

ALTHOUGH he had only had a short practice on the machine the previous day, Mr. Hawker started at 6.51 a.m. on Wednesday morning last, on the new Sopwith biplane with twin propeller, fitted with a 40-h.p. A.B.C. engine, for a try for the British Michelin Cup No. 1. This cup is offered for the longest duration flight on an all-British machine made before October 31st. After he had been in the air 3 hrs. 31 mins., mostly at a height of about 500 ft., a valve spring broke, which necessitated a descent.

FOREIGN AVIATION NEWS.

Aeroplanes for French Army.

So far the French National Fund has produced practically £70,000, which with the £300,000 voted by the Chambre for the purpose of buying 300 aeroplanes, makes a total of £370,000 which the French have for spending on aeroplanes this year. The greater part of the 300 machines has already been delivered and they will all be handed over before the end of the year, by which time the army will also have 62 additional machines purchased by the National Fund.

With regard to the ordering of aeroplanes a new system has been commenced, a commission, consisting of the chiefs of the Aeronautic Centres, Cols. Bouttieux, Etienne, and Breton, have been appointed, and it will meet every six months, and draw up a list of machines to be ordered, and arrange for their delivery. Another commission has been appointed which will have the duty of supervising the deliveries of the machines.

A Record Oversea Trip.

AN Italian aviator, Nino Cagliani, sprang into fame on October 9th, through his splendid flight from Pisa to Bastia, Corsica. He left Pisa at 3.27 p.m., and landed safely at Bastia at 5.30, taking two hours for the voyage of 150 kiloms. His machine was an Antoni monoplane, built in Italy, on Blériot lines, and fitted with a Gnome motor.

For the Coupe Pommery.

A SPLENDID effort for the Pommery Cup was made by Bernard on his Maurice Farman machine on the 11th inst. He started from Calais, to which place he had flown his machine from Buc the previous day. He got away at 6.25 a.m., accompanied by M. Senouque, and at 10.10 they landed at Versailles. Getting away again at 10.45, they landed at Bordeaux at 5.45 p.m., and then decided to stop on account of the gathering darkness. A couple of minutes after Bernard left Calais, Molla, on an R.E.P., was also timed away, but he was brought down at Villiers l'Hôpital with petrol-pipe trouble. On Monday, Gilbert started from Valenciennes on his Rhone-engined Sommer monoplane, but quickly returned and reported it impossible to get on owing to wind and rain. Bathiat and Daucourt will also make further efforts to win the Cup at the first opportunity.

Long Flights at Farman School.

AMONG the many fine performances at the Farman school at Buc last Saturday may be specially mentioned a trip of 2 hours by Lieut. Vanduyck, who has just finished his period of tuition, one of 40 mins. by Adjutant Panent, and the fine flying of Lieuts. Godob and d'Abrantes over Trappes, St. Cyr, Versailles, &c.

Guillaux a Superior Pilot.

ON his Clement-Bayard *metallique* monoplane, Guillaux on Sunday completed two tests for his military *brevet*, flying from Issy-les-Moulineaux to Montoire-sur-Loir, covering the 390 kiloms. in 3 hours 5 mins.

More Excursions by Vidart.

ON Sunday, Vidart, on his Deperdussin-Gnome machine, made an excursion over Port d'Ain and Bourg-en-Bresse. On his return to Amberieu he was flying for some time over the town and also round the Bugey mountains.

An Hour on a R.E.P.

AT the R.E.P. School at Buc, on Saturday, Lieut. Delvert was flying for over an hour. Several other military pupils put in some good work, and Granel, the instructor, made a splendid trip over Versailles and St. Cyr at a great height.

Another Batch of Farmans for French Army.

ON Monday seven Farman biplanes were handed over to the French military authorities at Chalons Camp. They included five 50-h.p. machines and two of 70-h.p., and were put through their paces by Testulot, the pilot of the Farman works at Buc.

After Four Months' Rest.

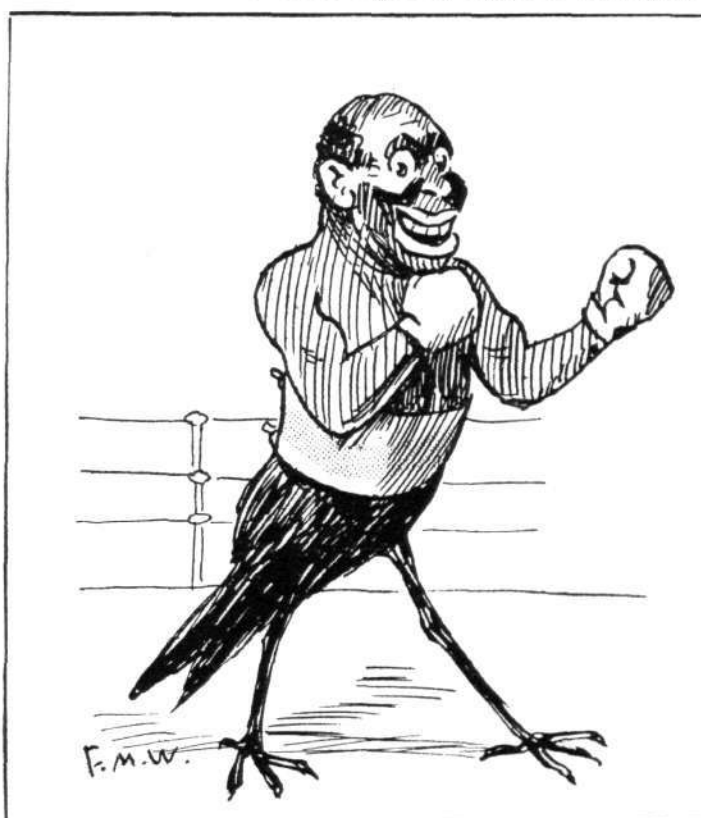
ALTHOUGH he had not done any flying for four months, Capt. Casse had no hesitation in mounting a Blériot machine on Monday and carrying out a trip of 250 kiloms. from Pau to Dax and Tarbes and back to Pau.

Good Training at Blériot School.

AT the end of last week the Blériot school at Etampes had the satisfactory record of having eight pupils securing their *brevets* within four days. In each case the period of training was very short, and, despite the gusty weather which had prevailed, none of the pupils were credited with any *bois casse*.

Flight "Man-Birds."—I.

—From the original by Frank M. Williamson.



THE BLACKBIRD.

Legagneux Flies at Night.

LATE in the afternoon of the 9th inst., Legagneux, on his Blériot-Gnome machine, started from Compiègne, and landed at Chartres after dark.

Recent Deliveries of Farmans.

APART from recent deliveries to the French Government, the Farman firm have within the past few days despatched machines to Italy, for service in Tripoli, while others have been sent to Greece and to Japan.

A Savary Superior Pilot.

ON a Savary biplane, Sergeant Penet, on Saturday, carried out some of the tests for his military certificate over the course, St. Cyr-Orleans-Chartres-St. Cyr. The machine was fitted with a Labor-Aviation motor, and had been flown over from the Savary works at Chartres by Penet a few days previously.

Testing Military Caudrons.

ON Saturday a party of French officers were at Crotoy to witness tests with a new 70-h.p. Caudron military biplane. With Rene Caudron at the tiller, the machine, carrying a passenger and full supply of fuel, &c., mounted 500 metres in 7 mins., and easily fulfilled the other requirements of the French Army.

Henry Farman has a New Machine.

DURING last week-end Mr. Henry Farman was very busy at Buc testing a machine, which has been fitted with a new arrangement of skids, &c., of which we hope to give particulars shortly.

Another Caudron Military Pilot.

OVER the course Crotoy-Treport-Calais-Crotoy, Lieut. Le Bihan made the first test for his military *brevet* on Saturday last on a Caudron machine. The same day two sappers passed for their Ae.C.F. "tickets," making five *brevets* secured in a week.

New Farman Superior Pilots.

ON the 11th inst., Capt. Bares, under instructions from his chief, Col. Hirschauer, carried out tests for the French superior military *brevet* on a Farman, flying from Buc to Chartres and Orleans and back, maintaining meanwhile a minimum altitude of 1,200 metres. On the same day, Lieut. d'Abrantes carried out his second test for this certificate, also on a Farman. Both completed the tests on the following day.

Madame Archdeacon in the Air.

AMONG the visitors to the Buc Aerodrome on the 11th inst. who were given their *baptême de l'air* by Mr. Maurice Farman were Madame Archdeacon and Madame Delaunay.

At the Farman School at Etampes.

ON Saturday Gougenheim arrived at Etampes, from Buc, on a new Maurice Farman machine intended for school work. He reported a splendid trip, having flown *via* Rambouillet and Ablis. On Monday, Lieut. Hanne returned after a long reconnaissance over Orleans, Argeres, Toury, and Angerville.

A Heavy Load on a Farman.

ON a Henry Farman machine a French non-commissioned officer, Guittou, left Villacoublay the other day, with a passenger and a load of 160 kilogs., which included 120 litres of petrol and oil. He passed over Epernay, and landed at Rheims. Having filled up the petrol and oil tanks, he set out again for Toul, but had to come down at Bar-le-Duc owing to the gathering darkness. He completed the trip to Toul the following morning.

The Hanriot School at Rheims.

TESTING a new 50-h.p. Hanriot monoplane sold to Italy, Bielovucic, on Saturday, mounted 1,500 metres in 9 mins., the machine carrying a load of 160 kilogs. Ponnier on the machine, with Rossel-Peugeot motor, put up a flight of two hours' duration. Ranlet and Favre also did good work on a new machine with a 60-h.p. Anzani motor. Two days previously "Biolo" took a passenger for a round trip: Rheims-St. Quentin-Compiègne-Rheims.

More Deperdussins for French Army.

A COUPLE of two-seater 70-h.p. Deperdussin monoplanes were accepted by the French Army at Rheims on Saturday. At the hands of Janoir, they climbed 600 metres in 7 mins. with a full load.

Flying at Mans Again.

AT the formal opening on Sunday last of the Hunandieres Aerodrome, near Mans—where, it will be remembered, the late Wilbur Wright made some of his first flights in France—Grazzioli made some exhibition flights at a height of 1,000 metres on an Anzani-Blériot monoplane.

Chemet after the Height Record.

EVIDENTLY the Borel firm have their mind on the height record, and Chemet, one of their chief pilots, has been putting in a good deal of high practice lately. On the 11th inst. he went up 3,000 ft. in a quarter of an hour.

Two Hours on a Zodiac.

BY way of practising before making the tests for his military certificate, Lieut. Alex. Coche made a flight of two hours on his Zodiac at St. Cyr, on the 11th inst. He successfully made the first trial for his *brevet* on Tuesday.

Military Flyers at Borel School.

A NUMBER of French officers have recently been putting in a deal of practice at the Borel school at Buc, and at the end of last week Lieuts. Garnier, de la Morlaye, de Vergnette, Ronin and Koeckel made several trips over the circuit Chateaufort-Guyoncourt-Buc. Lieut. Ragot qualified for his military *brevet* on a Borel on the 9th inst.

Fast Flying with New Rotary Motor.

LAST Saturday, Gilbert, on a Sommer monoplane fitted with a new rotary motor, "Le Rhone," flying from Mourmelon to Valenciennes, covering the distance of 200 kiloms. in an hour and a-half. He intends to try for the Coupe Pommery.

Good Work at Savary School.

ON Tuesday, Sergeant Saulquin finished his training at the Savary School at Chartres, as a military pilot, by a flight of an hour. Sergeant Brezillon was also up for three-quarters of an hour at 500 metres.

Six Brevets in One Day at Farman School.

IN addition to the two superior *brevets* won at the Farman school at Buc last Saturday, four pupils, Lieuts. Bretey, de Rocca-Serra and Nagasawa, and M. Poirson, passed the tests for their ordinary certificate.

A Long-Distance Farman Machine.

AT Etampes, Fischer has been very busy lately testing a new Henry Farman Baby machine, with which he may make an attempt for the Ae.C.F. criterium. On the 10th, the machine was flying well and speedily, in spite of a load of 450 kilogs.

A Presentation Blériot.

ON the 10th inst., Capt. Destouches visited Etampes to witness some tests with a Blériot machine presented to the Army by a French newspaper. Although it was only fitted with a 50-h.p. motor, and was carrying a load of 150 kilogs., Perreyon took the machine up 600 metres in 6 mins. He also made a flight of an hour's duration on it.

Cross Country on Farman Machines.

ADJUTANT DREVET and Sergt.-Major Quennehen on M.

Farman biplanes, flew from St. Cyr to St. Amand de Vendome in an hour and a-quarter on the 7th inst., and returned two days later. On the 8th, Lieut. Vogoyeau, with Sergt. Picard, went from Mailly Camp to Buc, at a speed of 115 k.p.h., and on the 10th, Bernard, with Senouque went from Buc to Beaumaris, near Calais.

Four more Military Deperdussin Pilots.

WITHIN four days, from the 7th to 10th inst., Capt. Erstirac and Aubry, Lieut. Degorge and Sergeant Didier qualified at Betheny on Deperdussin monoplanes for military certificates. Sergeant Verdier on the 10th went from Rheims to Amiens and back.

Testing French Military Machines.

AT Villacoublay Brindejonc des Moulinais tested two new 50-h.p. Morane machines for the French Army. The tests imposed were:—To carry four times the normal load without any permanent bending; the wings to carry a load of 1,600 kilogs. of sand without deflection; rise from the ground within 75 metres; climb 500 metres in 6 minutes with load of 150 kilogs.; *vol plané* from 100 metres, and stop in 45 metres. These tests were easily accomplished, and in a speed test the kilometre was covered in 28 secs. with and 35 secs. against the wind, giving a speed of 103 and 130 k.p.h. respectively.

King of Belgium and Aviation.

WITH the object of showing the King of Belgium what his aviators could do, Lieut. Demanent, on a Belgian-built Farman biplane, started from the Belgian Military Ground at St. Job, on the 11th inst., and flew to the Royal residence at Ciergnon. The weather was very cold and misty, but the officer had no difficulty in covering the 180 kiloms. in two hours. On arrival, the pilot was congratulated by the King, and invited to join the Royal Family at dinner. He explained the working of his machine to the King and the young Princes, and the following morning, when he flew back to Brasschert, His Majesty was present to witness the start in spite of the fact that it was at 5 a.m.

A Good Flight in Belgium.

ON the 11th inst. Crombez, on his Deperdussin monoplane, flew from Liege to Brussels, a distance of 110 kiloms., in one hour. He landed at the Beerchem Camp.

A Belgian Aeroplane Review.

ON Saturday last, General Van den Borpen paid a visit to the Belgian Military Aerodrome at Brasschaet to inspect the officers and machines there. The machines, which are all of the Farman make, were lined up, and after they had been inspected, Lieut. Nelis and five other officers made demonstration flights. During the inspection three lieutenants on Farman machines arrived from the St. Job flying ground.

Double Fatality in Switzerland.

WHILE Cobioni was flying with a journalistic friend named Bippert at La Chaux de Fonds, Neuchatel, on Tuesday morning, the machine capsized at a height of 80 ft. and both pilot and passenger were so seriously injured that they died shortly after in the hospital.

Flying Among the Alps.

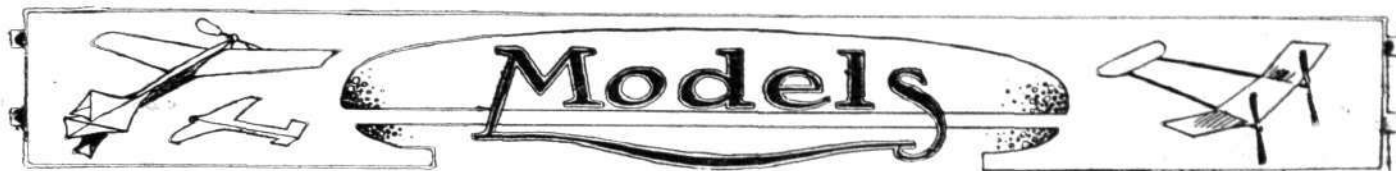
THE Swiss aviator Attilio Maffei on his Blériot-Gnome monoplane, flew from Como to Lugano, across the Italian-Swiss frontier. The flight was a very hazardous one, and the pilot had some difficulty in getting by the Generosa mountain.

Avros in Portugal.

MR. A. V. ROE and Mr. Copland Perry are now in Lisbon with the 50-h.p. Gnome Avro biplane, sold to the Portuguese Government. On the 10th inst., Mr. Perry made three splendid flights of ten, fifteen and twenty minutes' duration respectively, taking a passenger on two of the trips. Lisbon was in holiday mood on account of the anniversary of the Republic, and large crowds were attracted by the flights. On the following day the single policeman on the ground was powerless against the crowd, and Mr. Perry very wisely declined to fly again until a proper staff of policemen were present to regulate the erratic perambulations of the general public. He has, however, since taken up a great number of passengers, including several influential people.

The Danish All-Metal Monoplane.

AT Skejby Mark, near Aarhus, Denmark, Mr. N. L. Jansen has built a monoplane, with which he has achieved a fair amount of success. The chassis is entirely built up of steel tubing, and the front of the body is covered with sheet brass, while the main portion of the fuselage is covered with fabric. In general design the machine is somewhat similar to a Borel, but with an under-carriage of the Blackburn type. With a 2.1 metre Chauvière propeller, driven by a 25-30-h.p. 2-cyl. Anzani engine, the monoplane has flown very well, and Mr. Jansen is thinking of building some more machines on the same lines.



Conducted by V. E. JOHNSON, M.A.

Model Gliders.

A MODEL glider represents the initial or elementary stage of model aviation just as a power-driven model represents the most advanced. In the back numbers of FLIGHT drawings of a very great number of all sorts and conditions of model gliders have been given—notably in 1911. A great deal can be learnt from them, and they are and always will be worthy of careful study. It is related of the great Sir Isaac Newton that later on in life he regretted that he had not studied Euclid with that attention which so worthy a writer undoubtedly deserved. The story is that he had not studied him at all, but regarded his work to be of such an elementary character as to be self-evident. The moral of this story is obvious. If the greatest minds regret in later life a previous contempt for elementary things, how ill can the ordinary individual afford to neglect them with impunity. Of all the model gliders that we have experimented with we know none that surpasses the little Burge Webb glider illustrated in Fig. 3. In "Flying and Some of Its Mysteries," some eighteen or nineteen entirely distinct experiments are related that can be performed with it. They can be obtained from Mr. H. Burge Webb, 47D, Handsworth Road, Philip Lane, South Tottenham, in boxes of six for thirteen pence post free.

It may be as well to point out that a model glider is a very sensitive and delicate piece of apparatus indeed, and one which requires the most careful handling if good results are to be expected. The wings should never be handled if possible, but the machine carried, launched, and picked up by the backbone. Always be careful not to destroy or alter any crease or fold that the wing surface may possess. With fair treatment even a paper glider will last quite a long time, but we regret to have to say that most model gliders receive anything but fair treatment.

Another point in which due care must also be exercised is not to attempt to deduce too much *reliability in general*, from experiments made with such models in the (comparatively speaking) still air of a room. In the past dozens of patents and provisional specifications have been taken out on the sole strength of such experiments with the result that the patentees have, in by far the majority of cases, wasted both their time and money. Presuming, for the sake of argument, that you have, after a large number of experiments made with a small glider indoors, finally evolved a design which does seem worth something, the next step is to try it out of doors, on a considerably larger scale, *i.e.*, a minimum span of 4 ft. at least; at first in light breezes, and then in a high wind. Presuming it still successful, you would test it further by giving the model much longer flights, by suspending it from a kite some two or three hundred feet up and releasing it from the same. Again, presuming the result to be satisfactory, you would finally turn your glider—your (so-called) motorless aeroplane—into a motored one, *i.e.*, a model aeroplane carrying its own motor and propeller. The last test is an absolutely essential one; it is a natural conclusion to come to that if a model glider showing high stability glides well, it will also, when fitted with a motor and propeller, fly well and still show good stability. This by no means follows, however; so far as the loaded elevated-type of model is concerned, if it does not glide well when projected with its flight velocity, it is quite

certain it will not be a successful flyer; but it does not of necessity follow that because it glides well (carrying of course its motor and propeller) it will also fly well. Though it would perhaps be fairly accurate to say that in the type alluded to it generally does so. In the tractor type of model it by no means follows that if the machine glides well it will also fly well—I have seen very many instances in which it did not do so. Nor is the converse true that if it flies well it will also glide well (to earth) when the propeller stops. Generally it does not do so—the aeroplane losing a certain proportion of its lift due to propeller blast—dives more or less steeply to earth. The reader must not conclude from this that a tractor model cannot be made to both fly and (if the landing be made against the breeze) also to glide to earth—because I have seen one model at any rate that does it—but it is a notable exception. I cannot agree with the correspondent in last week's issue that monoplanes make less satisfactory gliders than biplanes. It is quite a common thing for a paper glider to make several successful flights and then refuse to do any more—the explanation being that either one of the falls or improper handling has slightly altered its configuration, &c., and the conditions for a successful glide are no longer present. Naturally each particular glider has its own particular velocity at which it glides best.

Mr. B. F. Hussy's Model Gliders. (Fig. 2.)

The following are some tabulated particulars of these gliders:—

No.	Length. ins.	Span. ins.	Gliding Angle.	Remarks.
1	1'7	5	1 in 4'6	This model is very stable. It has no fin or keel
2	2	4'5	1 in 4'2	This model is not so stable as No. 1. It has a fin below the main planes. It flies in a swooping manner
3	3	4	1 in 8	This model is not so stable as No. 1, but more so than No. 2. It is an exceptionally good glider, having several times flown 60 ft., and on one occasion 66 ft. were covered

[From what altitude?—V.E.J.]

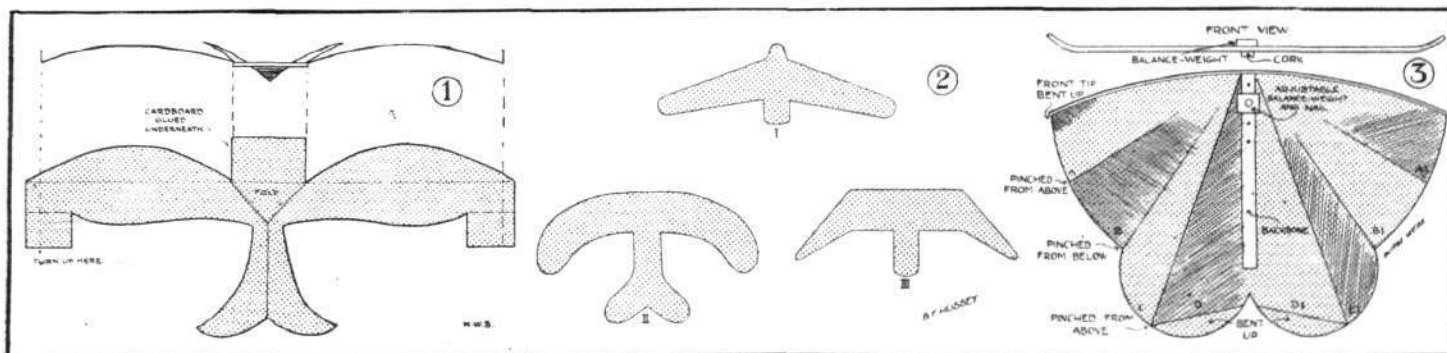
All the above models will fly out of doors. Could any of your readers, or could you inform me of the longest distance yet accomplished by a paper glider? I have got 66 feet in a calm outdoors with No. 3.

[Mr. Burge Webb claims a distance of over 100 yards, but launching altitude is not stated.]

"Practical" Aero Clubs.

We have received the following communication from Mr. S. Camm (Hon. Sec. Windsor Model Aero Club).

"It would appear from some remarks in your columns that the practical side of model aviation is eliminated from most clubs. I should like to venture the opinion that things are not so bad, at any rate we can claim to have accomplished something. Early this summer it was realized that something was necessary to give an



"Flight" Copyright.

Fig. 1.—The H. W. B. model glider. Fig. 2.—Mr. B. F. Hussy's model gliders. Fig. 3.—Mr. Burge Webb's model glider. The H. W. B. glider (Fig. 1) is best made with a span of 8 ins. The small piece of cardboard glued to the front elevator has the effect of making it swoop well. If the wings be not too thick it will, under favourable conditions, "flap" them when flying.

impetus to the club movement, so we started the construction of a glider, which has taken the form of a biplane of 30 ft. span, and as the accompanying photograph will show, is not bad for a first attempt. We are now awaiting a favourable opportunity to try it."

Mr. C. F. J. Gudgeon (61, Oldfield Road, Willesden), writes informing us that a practical aero club, under the name of the Willesden and Districts Aero Club, has been formed. Would anyone, wishing to become a member, kindly apply by letter only to the above address.

Forthcoming Exhibition.

The British Society of Fretworkers intend holding an exhibition at the Holborn Town Hall from November 27th to 30th, the same to include an exhibit of model aeroplanes and hydro-aeroplanes. All communications should be addressed to Mr. A. C. Horth, 38, Foyle Road, Blackheath, London, S.E.

Replies in Brief.

F. O'CONNELL (Canterbury Aero Club, N.Z.).—Many thanks for your letter and photos. Competitions are now practically over for this year, but no doubt something might be arranged for next.

R. MAGUIRE.—We do not quite understand your suggestion, but we take it your idea is to wind the rubber strand round a central tube or rod. Apart from other considerations a considerable amount of additional friction would be set up—which it is one of the chief aims of lubrication to do away with. There are also other drawbacks of a practical nature, but the above alone, in our opinion, more than counterbalances any possible advantage.

S. T. GILES.—The reason your rubber motor flew into some twenty pieces at 160 winds is because you lubricated it with vaseline—anything of an oily or greasy nature has an injurious effect on rubber. Get a tube of proper lubricant as advertised in these columns.

W. F. HUNTINGDON.—No use at all, as far as our experience goes, nor do we know of one for so small a weight; you will have to fall back on "good old rubber," unless you like to try a "rocket!"

J. DOIDGE.—Yours is by no means the first proposal of this kind; but before anything of that kind could be attempted, some satisfactory guarantees would be required. It could not be considered as a speculation.

T. E. DE Q. QUINCERS.—The machine is patented, and we cannot supply any such particulars. You must communicate direct with Mr. G. P. Bragg-Smith, 44, Caithness Road, Mitcham, Surrey.

H. F. BARNES.—We will endeavour to make use of same later on.

W. H. ARNO.—We can supply no further particulars. You had

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KITE AND MODEL AEROPLANE ASSOCIATION.

Official Notices.

British Model Records.

Hand-launched ...	{ Distance ...	A. E. Woollard ...	477 yards.
	{ Duration ...	A. F. Houlberg ...	89 secs.
Off ground ...	{ Distance ...	F. W. Jannaway ...	84 yards.
	{ Duration ...	G. Rowlands ...	30 secs.
Hydro, off water ...	{ Duration ...	G. P. Bragg-Smith ...	25 secs.
Single-tractor screw, hand-launched ...	{ Distance ...	H. R. Weston ...	84 yards.
	{ Duration ...	F. W. Jannaway ...	11 secs.

Lecture. The first great patriotic lecture of the winter session will be held on Friday, November 8th, at Caxton Hall, Westminster, at 8 p.m. Col. S. F. Cody will lecture on "What the Nation should do to stand First in Aviation," illustrated by exclusive animated pictures and slides. The proceeds of the lecture will go towards the purchase of equipment for the first war kite squadron. Members are asked to sell tickets to their friends, which can now be obtained from the hon. secretary. Price, 5s., 2s., 1s., and 6d. each. All members admitted free, on production of invitation which are already in their hands.

Official Trials.—All entries for the official trials to be held on Wimbledon Common, on Saturday, October 26th, must reach the hon. secretary by the 22nd.

Kite Competitions.—Competitors should note that the competitions on Wimbledon Common this afternoon (Saturday) start at 2.30 sharp. They should travel by District to Putney and thence by 'bus, or to Wimbledon station, District or S.W. Rly., and thence by 'bus to Windmill Road. 'Buses leave Wimbledon Broadway at quarter to the hour and quarter past, and from Putney at the hour and half-hour.

27, Victory Road, Wimbledon.

W. H. AKEHURST, Hon. Sec.

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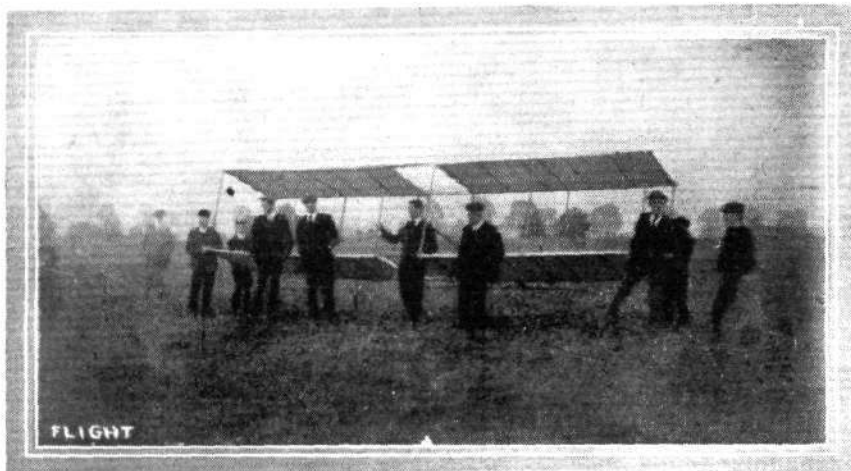
Excursions for Paris Salon.

In connection with the Aeronautical Exhibition to be held in Paris from October 26th to November 10th, the South Eastern and Chatham Railway have announced some special excursions. These will leave London on Fridays, October 25th and November 8th, and

better write to Mr. J. Dollittle, c/o Mr. A. B. Clark, Rochester House, 196, Brockley Road, Brockley, S.E., as we do not know the former's address (see issues April 13th, April 6th, March 23rd, March 9th, February 10th, January 27th, December 16th and December 9th. You are quite correct re flat planes. We will publish an article on the matter later; the matter cannot be adequately dealt with otherwise.

Query.

C. F. Temperley desires information as to the following: (i) The ratio of lifting surface to weight; (ii) Of surface to weight of rubber; (iii) To thrust, or pitch, or diameter of propeller; (iv) Total weight of machine to weight of rubber. [No type is



The Windsor Model Aero Club glider, taken before the extensions were put on.

stated; we presume r.o.g. type is meant. Perhaps some readers will kindly state their conclusions.]

Reply to Query.

Mr. C. C. Horner writing in reply to Mr. A. E. Barlow's inquiry, is in doubt as to which model is meant, presuming, however, that the reference is to the tractor monoplane, the propellers are his own design, and cut out from the solid, 7 ins. diameter, and driven by 1 in. square section rubber. The model has, however, undergone some improvements, and he advises Mr. Barlow to write him direct:—Blackstow Road, Macclesfield.

Duration Formulæ.

For $\frac{\text{weight of model}}{\text{power}}$ which is the measure of efficiency—read which is no measure of efficiency. (Last week's issue.)

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MODEL CLUB DIARY AND REPORTS.

CLUB reports of chief work done will be published monthly for the future. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

Aero-Models Assoc (N. Branch) (15, HIGHGATE AVENUE, N.).

OCTOBER 19TH. Final trials for Enfield contest at Finchley.

Blackheath Aero Club (48, HAFTON ROAD, CATFORD, S.E.).

FLYING at Blackheath and Grove Park during week-end.

Leytonstone and Districts Aero Club (64, LEYSPRING ROAD).

OCTOBER 19TH. Flying at Woodford Golf Links, 3.30. October 20th. Wanstead Flats, 9.30.

Paddington and Districts (77, SWINDERBY ROAD, WEMBLEY).

OCTOBER 19TH. Sudbury Hill, r.o.g. trials.

Reigate, Redhill and District (8, BRIGHTON ROAD).

OCTOBER 19TH. Visit of Croydon Club, and certificate flying.

Scottish Aero Soc. ("ROCHELLE," LIMESIDE AVENUE, RUTHERGLEN).

OCTOBER 19TH. Monthly competition, Paisley Racecourse, 3 p.m.

October 26th. Hydro-aeroplane demonstration, Maxwell Park, 3 p.m.

Windsor Model Flying (10, ALMA ROAD, WINDSOR).

OCTOBER 19TH. Tractor meeting, 2.30, Home Park.

Yorkshire Aero Club (Model Sec.) (53, WEST STREET, LEEDS).

OCTOBER 19TH. Hydro-aeroplane competition, small lake, Roundhay Park, 3.30 p.m.

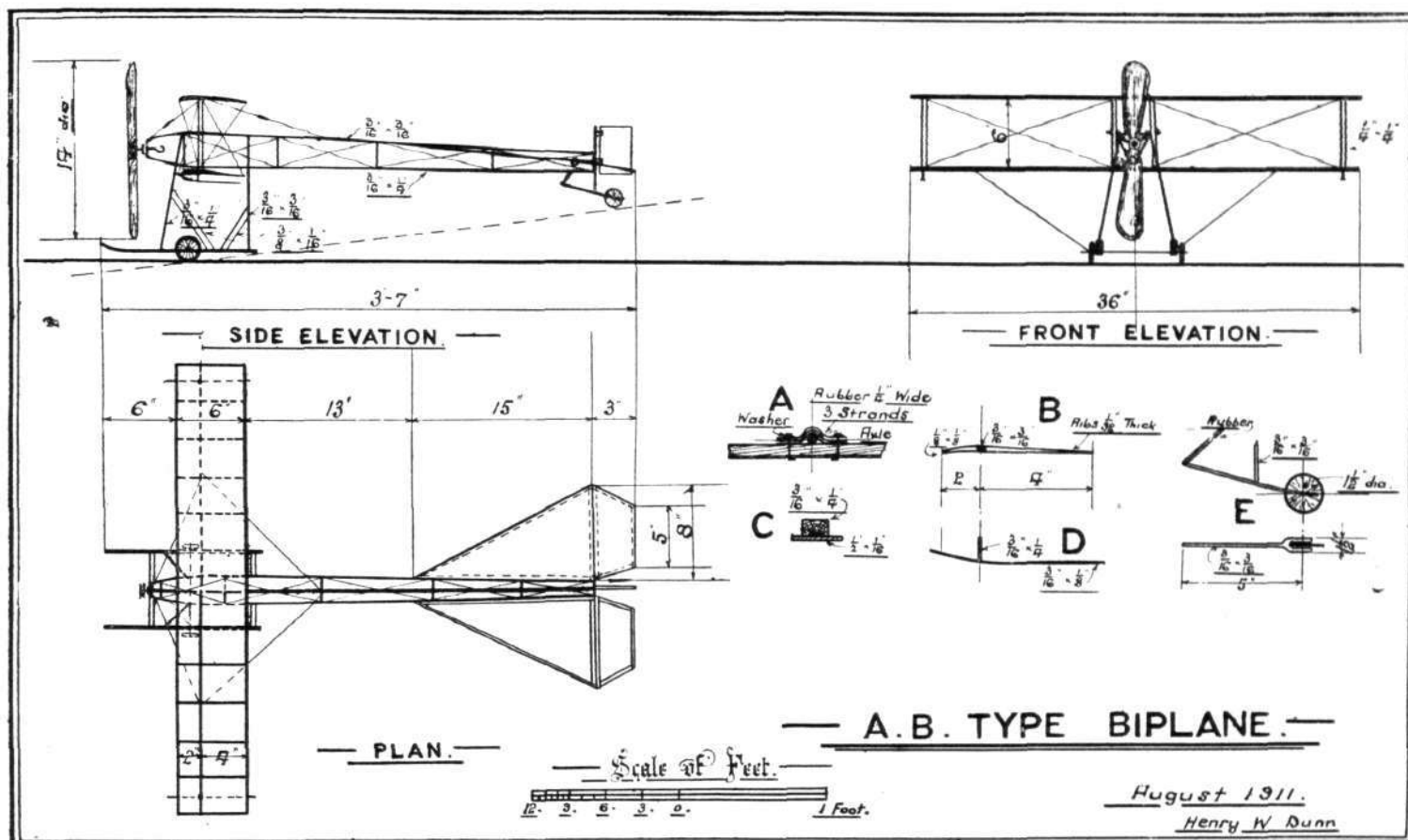
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Thursday, October 31st, and tickets will be available by the 10 a.m., 2.20 p.m. and 9 p.m. services from Charing Cross, and to return any day up to and including the Monday following date of issue and by the morning service on the Tuesday. Fares are 58s. 4d. first, 37s. 6d. second, and 30s. third class.

THE DUNN "A.B. TYPE" MODEL BIPLANE.

THE frame is constructed of birch, triangular in section; bottom longitudinals, $\frac{1}{8}$ in. by $\frac{1}{4}$ in.; two top ones, $\frac{3}{16}$ in. by $\frac{3}{16}$ in.; crossbars, $\frac{3}{16}$ in. by $\frac{3}{16}$ in. It is $2\frac{1}{2}$ in. wide at the front (in plan form) tapering to 1 in. at rear, and $2\frac{1}{2}$ in. tapering to 1 in. at rear (in elevation). Braced throughout with fishing cord. Planes double-surfaced and made as per Fig. B.; gap, 6 in. Area, $3\frac{1}{2}$ sq. ft. Aspect ratio, 6. Four uprights to main planes of $\frac{1}{4}$ in. by $\frac{1}{4}$ in. birch, and to which in the middle the frame is connected by means of two U bolts, made from bicycle spokes. Ribs are spaced 3 in. apart and are glued and bound to the spars. Fabric, "nainsook." All braced together with fishing cord with wire hooks and eyelets. End skids of poplar and shown at Fig. D. Tail is constructed of $\frac{1}{8}$ in. (birch) by $\frac{1}{4}$ in. wide, glued and bound at the joints. Rudder of

$\frac{1}{8}$ in. by $\frac{1}{4}$ in. poplar, 4 in. by 3 in., fixed to post by aluminium hinges. Chassis, birch and poplar. The axle is rubber sprung, as shown at Fig. A. Diagonal strips of birch, $\frac{3}{16}$ in. by $\frac{1}{8}$ in., are used as bracing members. Section of skid is shown at Fig. C. Rear skid is shown at Fig. E, and is cut by fretsaw. It is rubber sprung. Propeller built up, and is made of Venetian blind laths, $\frac{1}{8}$ in. thick, there are six layers glued all together. It is 14 in. diameter, and pitch about 20 in. It is fitted with bicycle spokes and nipples, and ball bearings. Motor, 18 strands of $\frac{3}{16}$ in. flat rubber strip. Distance between hooks, 33 in. Hooks covered with valve rubber to prevent wear. Lubricant, castor oil. Weight complete, about 12 oz. Weight of rubber, $1\frac{1}{2}$ oz. Longest flight, 120 ft.



High Flying by Naval Officers.

SOME splendid high flying has been done by some of the officers at the Naval Aviation School recently. On Tuesday, Lieut. Seddon took the Short "38" up to 8,300 ft., during a trip to Sheerness, and Eng.-Lieut. Briggs on the same machine, and carrying a passenger later went over to Dover and back, and *en route*, was at a height of 7,050 ft. At the end of last week Lieut. Seddon took the machine up to 7,500 ft., and with a passenger to 6,100 ft., and on Tuesday week he took a passenger up to 5,287 ft. **Flying Over the Forth.**

SOME splendid flying was seen from the Carlingnose aviation base on the Firth of Forth at the end of last week, and each day Commander Samson, Capt. Gordon, and Lieut. Hewlett were in the air. A number of experiments in bomb-throwing and in reconnoitering over torpedo boats and submarines have been carried out, while a large number of passengers, mostly naval officers, have been taken for trips. Lieut. Hewlett also carried out some tests in signalling to warships by means of a syren. The flying has attracted large crowds each day, who have witnessed the work from Port Laing, North Queensbury.

Cross-Country on an Avro.

A FINE cross-country trip on the Avro enclosed biplane which Lieut. Parke piloted in the recent Military Trials was made by Mr. F. P. Raynham on Friday of last week. Leaving Larkhill, he made his way through the fog to Newhaven, and then followed the coast to Shoreham, where he landed. He intended flying for the Michelin Cup No. 2 on Saturday, but deemed the weather too foggy, and only made one or two flights over the aerodrome.

Mr. Hamel at Wrexham.

ON the 9th instant Mr. Gustav Hamel and his Blériot monoplane were at Wrexham, and gave a display which was much appreciated by the people of East Denbighshire. Three flights were made from the Wrexham Racecourse, and during one Mr. Hamel piloted his machine round the town.

Mr. Valentine in Ireland.

ON Tuesday week Mr. Valentine was at Mullingar, and made a couple of exhibition flights on his Deperdussin from the Newbrook Racecourse. During the first, which was of about eight minutes' duration, he flew round the town, while in the second he was over Lough Owel, about three miles from Mullingar.

The Proposed Flight to India.

COL. S. F. CODY is anxious to try to make the proposed flight to India, and is making arrangements with Mr. Ernest Esdaile, who has the scheme in hand. Mr. Cody would probably use his Army Trials machine, but would build another one as a reserve.

An Aerial League Dance.

IN aid of the funds of the Aerial League, a dance has been arranged by the Richmond and District Branch, to be held at the Central Hall, Richmond, on Thursday next, October 24th. Mr. A. J. A. Wallace Barr, 5, Northcourt Mansions, Richmond Bridge, Twickenham, is the hon. secretary, and he will be pleased to supply tickets at 5s. each. Several of the Brooklands and other aviators are sure to be included in the assembly, and a very joyous evening should result.

CORRESPONDENCE

*. * The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

Correspondents communicating with regard to letters which have appeared in **FLIGHT**, would much facilitate ready reference by quoting the number of each letter.

Automatic versus Inherent Stability.

[1650] At the risk of tiring your readers, and with the consent of your long-suffering Editor, I should like to say just a few final words on the subject of "Automatic versus Inherent Stability." The subject is of such very great importance that I believe it should be viewed from all sides. I have enjoyed reading the criticisms which my letter has evoked. Some of your readers, I believe, however, have misunderstood my letter, and certainly they have misunderstood my intentions.

In writing as I did about those who are struggling to perfect the aeroplane, and who know nothing whatever about the subject, I did so thinking only to help them. In the hangars of England, France and America I found so many pathetic examples of men trying to perfect something about which they knew nothing that I felt it my duty to point out to them that they should at least acquaint themselves with the fundamental principles of the science of aeronautics before trying to accomplish what the best aeronautical engineers have not, so far, been able to do. Any man who has read what has been written on the subject and who is well acquainted with the fundamentals of the science does not come under my criticisms. If a man is to become a physician, he studies what has gone before, and the same should apply to any branch of human endeavour. I only criticised the ignorant enthusiasts who had their own little idea so close to their eyes that they could not see beyond it, nor perceive the glaring defect of their system. I am so much interested in the science of aeronautics that I would not for a moment discourage any legitimate worker in the field, and I trust my letter did not have this effect in a single instance.

I read with interest Mr. Frank W. B. Hambling's letter (1614) criticising my letter (1606).

My previous remarks answer the first part of Mr. Hambling's letter. With regard to the latter portion of his criticism as to the relative value of automatic and inherent stability, I do not agree that it would be advisable to have both automatic and manual stability. I know enough about operating an aeroplane to realise that to maintain one's stability laterally by the ordinary method one must give the matter very close attention; and I cannot see but what this will always be the case even if the inherent stability is increased. What I do say, however, is that if we have automatic stability we must have such a system that we can practically trust it with our lives, and not depend upon correcting any mistakes it may make by the manual method. In other words, as I said in my previous letter, there is no use in buying a watch dog and then sitting in the front window to watch the dog. We might just as well watch for the thief ourselves, and do away with the canine. If a man has automatic stability in his aeroplane he is going to depend upon it very largely, and when it finally fails, as it must according to its construction, sooner or later, the aviator may not be in a position to correct the difficulty before it is too late.

What I tried to do in my letter was to point to the great advantage of inherent stability as compared with automatic stability, with the idea of turning, if possible, some of those who were struggling to obtain automatic stability from their quest so that they might devote their attention to inherent stability, and I still claim that it is the men who have not flown who want automatic stability. Practical aviators would rather trust their lives to their own brain and muscles than to an automatic device that is sure to fail sooner or later.

As to the possibility of attaining inherent stability, I believe that sooner or later it will come, if not entirely, at least to a very great extent. The high-speed machines of to-day are very much more stable than the earlier machines of the box-type variety. By giving close attention to stream-line form, and the aerodynamic efficiency of the planes, I believe that high speed will be possible with comparatively low-engine power, and high speed means increased stability. I will never forget going from my three-cylinder Anzani Blériot monoplane to my 70-h.p. Gnome-driven machine. I thought I would have difficulty in operating the latter, but I found it was infinitely easy as compared to the school model. Add to the natural stability which will be obtained with increased speed a certain amount of stability which will sooner or later, I believe, be attained by the inherent construction of the machine, and I believe we will have an aeroplane which will be of great practical use.

Mr. Frank W. B. Hambling closes his letter with the statement, "The watch dog always wants feeding and attention." I will agree that this is the case, but not while he is doing his duty as a watch dog. In other words, you have to feed him in the day-time, but at

night he performs his duty. You don't get the dog and then watch the dog as you do when you install automatic stability in an aeroplane, and then stand ready to correct any mistake of the automatic mechanism.

Again let me apologise for taking up so much space on this question, and my only excuse is the great importance of the problem under discussion. And the aviator who is actually flying is usually too busy to give these academic questions much of his time, and, hence, what appears in print is largely from those who have not flown. It is well to look on all sides of a problem, and for that reason I have put forward my ideas, as those of an aviator and an engineer who is devoted to the science of aeronautics, and who is giving much of his time gratuitously to the movement in which we are all so much interested.

Mass., U.S.A., Sept. 26th, 1912.

EARLE L. OVINGTON.

Momentum in Air.

[1651] Regarding your article on Momentum in Air, I venture to suggest that the standpoint taken up in this article is absolutely wrong. Accepting the definition that "momentum is the quantity of motion of a body relative to the surface of the earth." It becomes a matter, as you say, of simple dynamics as to what will happen to an aeroplane under any set or change of conditions.

Taking the case where the aeroplane is heading against a wind and the propeller stops abruptly, we can either consider the machine to have a momentum relative to the air or accepting the definition above as having no momentum, while the air has momentum. In this latter case it is only necessary to remember that the aeroplane has inertia.

In any case where an aeroplane is travelling through the air with velocity v and the engine stops, what happens is that the head resistance $= C v^2$ when C is constant, and therefore the aeroplane will be subject to a negative horizontal acceleration, $f = \frac{C g}{W} v^2$ when v_1

is the difference between the horizontal velocities of the air and the aeroplane (and also to a downward acceleration as the relative speed between machine and air decreases).

Without involving our old friend ϵ in the discussion, it is quite obvious that when the engine stops the aeroplane is subject so far as momentum is concerned to precisely the same conditions, whether the wind relatively to the earth is head on, sideways on or behind the aeroplane.

And if the air were of continuous and even composition, the aeroplane would behave in precisely the same manner whether there were no wind or ANY wind. In practice it does not do so, as you say, and there is undoubtedly some difference between having the wind relative to the earth's surface against or behind the aeroplane. But surely this may, nay must, be due to the continual alteration in the speed of the wind, which is commonly about 20 per cent. above and 25 per cent. below its mean velocity (talking of the wind near the earth's surface).

Now suppose a machine whose velocity in still air is V is travelling against a wind whose mean velocity is U , then the mean maximum velocity of the wind is $1.2U$, and the mean minimum velocity is $.75U$.

Suppose also, for the sake of a clear example, that $V=U$, and that for some seconds U has been constant, and then U falls to $.75U$; then, if P be the propulsive force, $P=CU^2$. But the head-resistance is now $CU^2(.75)^2$. \therefore aeroplane will start accelerating under a force $= P - .5625P = .4375P$.

On the other hand, suppose U had risen to $1.2U$, then the head-resistance would be $CU^2(1.2)^2 = 1.44P$, that is to say, the aeroplane would start a negative acceleration of $.44P$, or practically the same negative acceleration as the positive acceleration.

In practice, however, the negative acceleration would probably be lower than $.44P$ in sudden gust because the propeller would not speed sufficiently quickly, while the positive acceleration in a sudden lull would be slightly greater than $.4375P$ for a similar reason. Now the mean lull velocity is $.75U$, and the mean gust velocity is $1.2U$. Hence we must have been having 5 per cent. more gusts than lulls. And since the aeroplane's speed tends to be equally increased and decreased by a lull and a gust respectively, we may expect that an aeroplane travelling dead against a wind will lose 2 or 3 per cent. of its normal air speed, and similarly travelling down wind it will have 2 or 3 per cent. more than its normal air velocity. Consequently, we ought to find that the machine is somewhere about 20 per cent. more controllable travelling down wind than up wind when the wind is gusty.

Eastchurch.

J. W. SEDDON.

[1652] I should like to offer an opinion on this subject, about which there seems to be some opposition of ideas.

Take, for example, an aeroplane capable of 60 m.p.h., that is in a calm, and suppose it stationary against a wind of 60 m.p.h. Now according to your correspondent, Mr. Williams, if the wind suddenly ceased, and the engine was cut off at the same moment, the machine would rush forward at 60 m.p.h. in the calm.

Now take the same circumstances but with the engine still on when the wind ceased; the machine, capable of 60 m.p.h. in a calm, would attain that speed, it being obviously impossible for it to go faster.

Therefore, according to Mr. Williams, the aeroplane would travel at the same speed with the engine on or off. Perhaps he will answer this point.

E. W. RUSH.

[1653] May I through the medium of your columns endeavour to give a lead through the maze of phraseology that seems to have grown up round this subject.

To change the motion of mass requires the operation of force during time. This property of mass we term *inertia*, and we value mass by the number of units of force required to produce a change of one unit of velocity in one unit of time in that mass.

To make this valuation we must compare the relative motion of two masses, and ascertain all the forces operating on either that are causing relative motion between them; we can then calculate the number of units of force operating on one mass only which produces a given change of velocity in a given time in that mass.

The product of units of mass \times units of change of velocity produced in that mass we equate to units of force operating on that mass \times units of time of operation, and thus we value our mass.

The product of mass \times change of velocity in these units we term the momentum caused by the application of a given force during a given time, and we believe that it will require an equal product of units of force \times time to produce an equal change of velocity in that mass.

When we speak of momentum strictly in this sense it is reasonable to regard it as something inherent in the mass to which force has been applied.

But if we use the phrase *momentum of one mass relative to another*, to indicate the product of the number of units of one mass \times the units of relative velocity occurring at any moment between the two masses, we are speaking of a quantity which it may be useful to regard at any instant as a condition appertaining to the one mass but, nevertheless, a quantity which, as time passes, is varied just as much by the operation of forces on the other mass as on the one. We can draw a conclusion that a certain product of force \times time acting on the one mass will be necessary to destroy its velocity relative to the other mass if the motion of the other mass does not change meanwhile, but merely because the relative motion between the two masses changes we can draw no conclusion that this is due to force operating on the one mass, unless we know that there has been no change of force operating on the other.

Now, as a matter of observation, we find that the forces operating on the earth's movements do not produce any appreciable change in the relative motion of the atmosphere near the earth's surface and of small objects suspended in it, the whole earth and atmosphere tending to move as one solid block. Any changes which we observe in the relative motion of parts of the atmosphere and objects supported in it we find to be due to the operation of forces which do not affect the earth's motion. We therefore are accustomed to regard the *momentum relative to the earth* of small objects on or near the earth's surface as due solely to the operation of forces on those objects and as variable only by the operation on them of forces not affecting the earth's motion and thus we come to look upon *momentum relative to the earth* as something inherent in the mass whose momentum is spoken of.

[I do not assert that the error in this assumption is really negligible for purposes of flight, but at present it is usually so regarded.]

When, however, we speak of the momentum of an aeroplane relative to the air, we are speaking of a quantity which is in fact being constantly varied by forces acting on the air. If an aeroplane have *momentum relative to the air*, there certainly must be an operation of force during time to vary that momentum, but such force may operate solely on the air or solely on the aeroplane, or in any degree on both.

If such momentum varies or disappears we cannot assume that it has been due to the operation of force on the aeroplane.

Thus, if an aeroplane at one moment have no momentum relative to the earth but have momentum relative to the air, and at a later moment have no momentum relative to either, we know that there has been no change of total force on the aeroplane (except that which equally affects the motion of earth and aeroplane), and that

the change of momentum has been due to forces operating on the air.

The idea that an aeroplane must bound forward on a simultaneous release from air pressure and force of propulsion, arises from looking on this phrase "momentum relative to the air" as something which can only be destroyed by the operation of force on the aeroplane, and it is this idea which it is so necessary to get rid of.

All that is inherent in the aeroplane is its inertia, i.e., the fact that it requires a definite product of force \times time to give a definite change to its own motion, but we can only say that *its own motion has been changed* when we can compare it with the motion of some other object, and fully account for all the forces acting on each of them that are producing change of relative motion between the two.

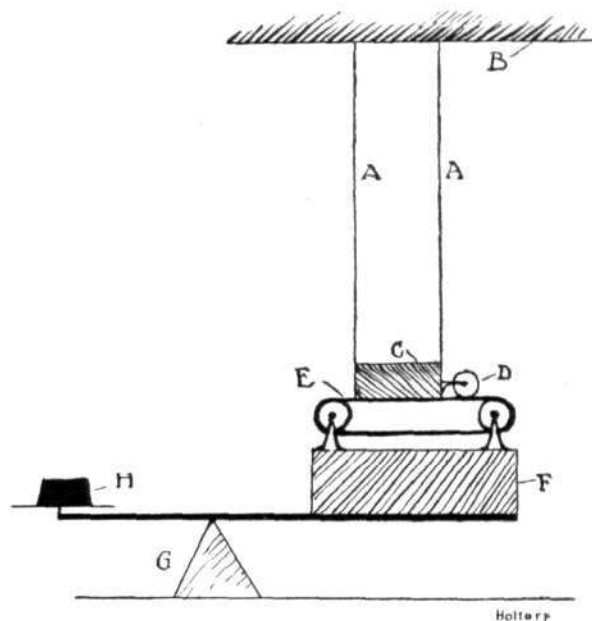
The phrase *momentum relative to the earth* does imply (with certain limitations which may become of importance in the study of flight) that a certain definite product of force \times time must be applied to the aeroplane to bring it to rest relative to the earth.

The phrase *momentum relative to the air* implies nothing whatever of the kind, it is merely useful because while the aeroplane is meeting equal masses of air in equal times it saves a certain amount of verbiage in referring to the difference in momentum relative to the earth of the aeroplane and the air it meets, but it has led to so much confusion of thought that it would be better avoided.

Limpley, Stoke.

H. D. CAREY.

[1654] Much time and argument in this matter can be saved as the question is open to experimental verification by simple means:—
Experiment (schematic):—



B. Ceiling or beam. A. Wires supporting C (also current supply). C. Body containing motor. D. Driving wheel. E. Endless belt. F. Support and motor for belt. G. Balance. H. Weights.

C represents a flying machine, E the air, D the propeller.

The friction of E on the bottom of C represents the resistance of the air. The drive of D on E represents with its slip the action of the propeller on the air which, by reaction, is forcing C forward.

By adjustments between

1. Power in C
2. Nature of bottom surface of C
3. Nature of surface of E
4. Weight, H, giving pressure of E on C
5. Loading on D
6. Speed of E

it is easy to maintain C without relative motion to earth.

Since D has no driving power on the actual air, by removing H or adding weight to other end of balance at F, E is removed from contact with C, and the effect is exactly as if power and wind were both suddenly cut off in the case of a real aeroplane.

The absence of motion, or otherwise, of C, shows what would happen in the case of the aeroplane.

This experiment is quite easy to carry out as both C and F are simply motors with, in the case of C, a flat base to which can be attached friction material and a bracket for D, and in the case of F an arm attached bearing a pulley in addition to the motor pulley for the other end of the belt.

Purley.

H. E. VON HOLTORP.

